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ABSTRACT

The principal objective of Project Sesame is to improve opportunities for pupil learning by developing a model for the coordination of smaller school districts' innovative ventures; a related objective is the stimulation of professional staff. This Project Sesame document lists educational games (K-12) developed at workshops by teachers in a 5-county region of central Pennsylvania. Many of the games have been played and tested in the 18 elementary and secondary school systems in the region. To achieve the objectives, diverse innovative, experimental, and curriculum programs are supported by Project SESAME G which is financed with ESEA Title III funds. The game listings include a general description, suggested subject areas (business education, foreign languages, geography, health, language arts, math, science, and social studies), grade levels (primary, intermediate, junior high, and senior high), and number of players, as well as possible subject areas or grade levels for which the games can be adapted. Index sheets are included to assist the reader in using the alphabetized list of games. All of the games have been edited and are continually being revised by the SESAME G staff. Write-ups of the basic components of each game are available from the SESAME office on request. (WCM)

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PROJECT SESAME

PRACTICAL DOCUMENT NUMBER 7

ANNOTATED LIST
OF
LOCALLY DEVELOPED EDUCATIONAL GAMES

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
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Teachers in Region I

Project SESAME G Staff

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Project SESAME G

(Susquehanna ESEA Synergetic Activities for Maximal-involvement via Educational Games)

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(Title III, ESEA, Project Number 5442, L-4)

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PREFACE

Project SESAME (Susquehanna ESEA Synergetic Activities and Multi-innovative Experiences) is a regional complex of projects involving each of 18 school districts, as well as the non-public schools in Columbia, Montour, Northumberland, Snyder, and Union Counties in central Pennsylvania. This program, and other SESAME undertakings (SESAME A in arts, and SESAME G in games) are financed primarily with Title III, ESEA, funds. The principal objective of the program is to improve opportunities for pupil learning by developing a model for the coordination of smaller school districts' innovative ventures and by stimulating professional staff. To this end, diverse innovative, experimental, and curriculum programs affecting elementary and secondary school systems in the Region are supported and coordinated.

The purpose of a Practical Document is to present a useable document, curriculum unit, program, series, conference report, etc., in written (or other) form. It will appear after extensive tryout (i.e., after initial tryout and/or field testing) and/or after considerable development.

Practical Document Number 7 is a result of Project SESAME G (Susquehanna ESEA Synergetic Activities for Maximal-involvement via Educational Games). This document will acquaint teachers and others with games developed at workshops by teachers in the five-county area served by SESAME. These games have been edited, and many have been tried out in the schools in Region L. An earlier publication (Practical Document Number 6) consists of an abbreviated list of commercial games that can be obtained for use in the classroom; this Document, on the other hand, lists games developed in the Region. Write-ups of the basic components of each game are available from the SESAME Office upon request.

This list represents primarily the work of teachers in the five-county area with final editing done by the permanent SESAME G staff.

Alterations, corrections, and additions of these games have been made over the past 1968-1969 academic year by the SESAME G staff. As a Practical Document, this list is considered highly useful at this point, but it is far from complete. As new games are written and tested, it will be revised.

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INTRODUCTION

Presented in this Practical Document is a list of educational games developed by teachers in the five-county Region served by Project SESAME. All of the games contained in this document have been edited by the SESAME G staff, and many of the games have been played and tested by teachers in their classrooms in the five-county Region. The results of these tryouts are now being processed by the SESAME G staff.

These games are listed in alphabetical order. Each listing includes a general description of the game, the suggested subject areas in which the game could be used, the suggested age and number of players, and other possible subject areas or grade levels for which the game could be adapted. Index sheets are included in this Document to assist the reader in using the alphabetized list of games. These indexes list games by subject areas and by grade levels:

Subject Areas	Grade Levels
Business Education	Primary (K-3)
Foreign Language	Intermediate (4-6)
Georgraphy	Junior High (7-9)
Health	Senior High (10-12)
Language Arts	
Math	
Science	
Social Studies	

For example, if the reader were looking for a Social Studies game for fourth grade, he would first check the Social Studies list. He would then check to see which of these games appear on the intermediate grade level index.

SUBJECT AREAS

BUSINESS EDUCATION

1. Inflation
2. Merry Mi$ers
3. Protecto L

FOREIGN LANGUAGES

1. El Sueno Ideal De Don Quiyote

GEOGRAPHY

1. Conserv-O
2. Forest Adventure
3. Map-O-Rama

HEALTH

1. Camp-A-Rama
2. Conserv-O

LANGUAGE ARTS

1. Bid-A-Word
2. Climb-O
3. Dilist
4. Donkey Race
5. Fillaform
6. Merry Mailman
7. Pick-A-Leaf
8. Pick-An-End
9. Progressive Word Rummy
10. School Democracy
11. Sentence Roll
12. Shock-O
13. Spinoblend
14. Take And Make
15. Word Tumble

MATH

1. Aqua Math
2. Fraction Track
3. Inflation
4. Merry Mi$ers
5. Mod Math
6. Quad-Geommy
7. Sunny Numbers
8. Whiz-Mate

SUBJECT AREAS (Cont.)

SCIENCE

1. Camp-A-Rama
2. Conserv-O
3. (The) Element Family Game
4. Forest Adventure
5. Map-O-Rama
6. Re-Con
7. Satisfaction
8. Solar-O
9. Space Race
10. Spec-Cat
11. Y-Change?

SOCIAL STUDIES

1. Boliquay
2. Conserv-O
3. Discovex
4. Forest Adventure
5. Inflation
6. Map-O-Rama
7. Merry Mi$ers
8. Pass-A-Bill
9. Re-Con
10. Satisfaction
11. School Democracy
12. Stay Or Go
13. Stump the Stars

GRADE LEVELS

PRIMARY

1. Aqua Math
2. Camp-A-Rama
3. Climb-O
4. Conserv-O
5. Dilist (Primary-First Grade Version)
6. Donkey Race
7. Merry Mailman
8. Mod Math
9. Pick-A-Leaf
10. Pick-An-End
11. School Democracy
12. Shock-O
13. Spinoblend
14. Sunny Numbers
15. Take And Make
16. Whiz-Mate

INTERMEDIATE

1. Aqua Math
2. Boliguay
3. Camp-A-Rama
4. Conserv-O
5. Dilist
6. El Sueno Ideal De Don Quiyote
7. Fillaform
8. Forest Adventure
9. Fraction Track
10. Map-O-Rama
11. Merry Mi$ers
12. Mod Math
13. Progressive Word Rummy
14. Satisfaction
15. Sentence Roll
16. Shock-O
17. Solar-O
18. Space Race
19. Stump the Stars
20. Word Tumble
21. Y-Change?

GRADE LEVELS (Cont.)

JUNIOR HIGH

1. Bid-A-Word
2. Boliguay
3. Conserv-O
4. Dilist
5. Discovex
6. (The) Element Family Game
7. El Sueno Ideal De Don Quiyote
8. Fillaform
9. Forest Adventure
10. Inflation
11. Map-O-Rama
12. Merry Mi$ers
13. Pass-A-Bill
14. Progressive Word Rummy
15. Quad-Geommy
16. Re-Con
17. Satisfaction
18. Sentence Roll
19. Solar-O
20. Space Race
21. Spec-Cat
22. Stay Or Go
23. Y-Change?

SENIOR HIGH

1. Dilist
2. Discovex
3. (The) Element Family Game
4. El Sueno Ideal De Don Quiyote
5. Inflation
6. Protecto L
7. Quad-Geommy
8. Re-Con
9. Y-Change?

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AQUA MATH

This board game is designed to help the child master the concepts of basic math facts (addition, subtraction, multiplication, and division). Suggested for primary and low intermediate grades, it can be played by as few as two children or as many as the entire class.

The same format can be used to teach spelling.

BID-A-WORD

This hybrid role-play and board game promotes the learning of prefixes in the junior high grades.

It could also be used to teach the meaning of suffixes or to provide drill in foreign language study; for example, verb endings.

BOLIGUAY

A role-play game, BOLIGUAY teaches about interest groups and problems in a Latin American country. In "Boliguay," a fictitious country, four interest groups attempt to influence a legislative decision. Designed for use with sixth graders, this game can easily be adapted for use at the secondary level. Entire classes can play.

By rewriting the roles and scenario, a teacher could use this game to study the legislative process in a European country, an African country, the United States, etc.

CAMP-A-RAMA

This board game will help the student make decisions to overcome the unforeseeable situations that may arise during a camping trip. Pupils may also learn the advantages in sharing with others. The game also familiarizes students with camping equipment.

Two to six players or groups of players can play the game. It is designed for children of all abilities in grades 3-6.

CLIMB-O

This board game enhances the teaching of short and long vowel sounds and increases vocabulary. It is designed for children of all abilities in grades 1-3. Groups of four children can play.

The same format can be used to teach blends, digraphs and other elements of phonics, or to teach number facts and review arithmetical computations.

CONSERV-0

This board game is designed to promote an understanding of conservation problems and practices in the United States. Through the play of the game, children will become familiar with appropriate solutions to many conservation problems. The game exposes the students to the government departments responsible for the execution of proper conservation practices.

Students play in groups of three to five players. The game was designed for pupils in grades 4-6.

DILIST

(Directions & Listening)

This board game is designed to improve the skills of giving clear and accurate directions and of listening carefully in order to follow directions correctly. By altering the difficulty level of the game components, it can be used in grades 2-12 in any subject area. A whole class can play.

DILIST - KINDERGARTEN - FIRST GRADE VERSION

A simplified version of the above game for the kindergarten and first grades has been developed.

DISCOVEX

This board game is to be used in conjunction with a social studies unit on "The Age of Exploration and Discovery." It enables students to review explorers and their voyages. Designed for students in grades 9-12, it can be adapted for use at all lower levels. Groups of four students can play.

Different explorers, explorers and countries from which they sailed, or explorers and dates of voyages could be substituted on the game boards and cards. A similar game board could be used to teach associated facts in mathematics, geography, history, science, and English.

DONKEY RACE

This board game provides drill in rapid recognition of the Dolch Basic Sight Words in a most unique way: the child tosses a bean bag on a donkey which contains the words. The game would be of most interest to children in the primary grades and in remedial reading classes. It can be used with either two to four players or with the whole class by employing teams.

If adapted, DONKEY RACE can be played using definitions, spelling, color recognition, drill in arithmetic, and blends, or any other subject which requires review.

(THE) ELEMENT FAMILY GAME

This board game reviews the elements of the Periodic Chart, which are related through corresponding groups to Families, and through symbols or names to the members of the Families. It can be played by secondary chemistry or physics classes of any size.

The same format can be used on any grade level in any subject matter which requires categorizing.

EL SUENO IDEAL DE DON QUIYOTE

(The Impossible Dream)

This board game reviews the conjugations of Spanish verbs. Designed for use in Spanish I to III, the game involves the entire class. Don Quiyot's battle with windmills is symbolized in the game.

French adaptations are included: Lettres do Mon Moulin (Letters from My Mill).

FILLAFORM

A hybrid game designed to encourage students to follow written directions accurately, FILLAFORM can be played with students from sixth grade to the end of junior high. It is a game which the whole class can play at one time, no matter what the class size.

By substituting real forms, such as a college application or a school registration form, in place of those mentioned in the game, the teacher can prepare students to fill out any form.

FOREST ADVENTURE

A teaching game designed for grades 4-8, FOREST ADVENTURE helps students recognize the value of our natural resources, acquaints them with the interdependence of forest regions, and teaches facts about the propagation and commercial uses of trees. Groups of five students or five teams of students can play.

The game can be adapted for social studies, science, and industrial arts classes.

FRACTION TRACK

This board game teaches equivalent fractions to pupils in the intermediate grades. It is a game in which the entire class can participate.

The same format can be used with other areas which lend themselves to the "discovery" method of learning.

INFLATION

This combination role-play board game teaches the concept of inflation to secondary pupils. Students assume various occupational roles and become acquainted with the different methods employed by various persons as they attempt to cope with inflation. The student becomes familiarized with causes, effects, and results of inflation. From nine to sixteen players may participate in the game, which may be played in two or three class periods.

MAP-O-RAMA

This board game was designed to teach map reading skills (population, natural resources, political, products, geographic relief, and precipitation maps) to children in grades 5-7. Six to 36 players can play at one time; players play in teams.

This same format can be used with sets of historical maps from United States or world history classes or with other types of geographical maps.

MERRY MAILMAN

This hybrid game teaches letter recognition. MERRY MAILMAN can be used in kindergarten or first grade after letters have been introduced. It is an active team game involving the whole class. The decks need not contain all of the letters in the alphabet. In the early stages of "letter learning," the game can be played using only four or five different letters.

The same format can also be used in the teaching of blends, words, numerals, addition and subtraction.

MERRY MI$ERS

This combination role-play board game was designed to familiarize fourth, fifth and sixth graders with various banking procedures. The objectives include: writing out checks, depositing money, endorsing checks, and making out bills of sale. A whole class can participate in the play of this game.

MOD MATH

This board game teaches the basic processes of addition, subtraction, multiplication, and division and the proper names of arithmetic operations; it also emphasizes the correlation of symbols, terminology, and arithmetical computations. The game can be used in grades 2-4, and it can be adapted for use at all levels. Entire classes can play.

To increase the game's difficulty, different sets of numbers may be added to the problem cards. For older students, different mathematical relationships could be added, e.g., square roots, factors, etc.

PASS-A-BILL

This board game was designed specifically for use in an eighth grade American history class. Through the playing of the game, students recognize the difficulty involved in getting a bill to become a law.

PICK-A-LEAF

This game reviews the whole initial alphabet. Although designed for grade 1, it can be adapted for use in grades 1-3. The whole class can play at one time, divided into two teams, each with a leader.

The same format could be used in English to teach dipthongs, digraphs, suffixes and prefixes, root words and blends; it could also be used to teach numbers.

PICK-AN-END

Designed for first and second graders, this board game teaches or reviews the short vowel sounds. Students play as individuals in groups of four to six players. This game could also be played by slow learners in advanced grades.

A similar application of the game would be to change the format so that the beginning sounds are put on the playing boards and a vowel deck of cards is used instead of a beginning sound deck.

PROGRESSIVE WORD RUMMY

This card game teaches synonyms and promotes efficient use of the dictionary and thesaurus. Although designed for grades 4-6, it can be adapted for use in grades 7-9. Groups of two to four students can play.

The same format can be used to teach a range of classifications, from animals and transportation vehicles to biological categories or schools of art.

PROTECTO L

A board game which is to be used at the end of an instructional unit on life insurance, PROTECTO L reviews the characteristics of the four major types of life insurance: limited life, endowment, term, and straight life. It was designed for secondary classes in consumer economics or business education courses. The game is played in groups of five students.

The same game format can be used to review other types of insurance, such as fire, automobile, or health policies. Also, it can be used to teach such classification processes as those involved in biology and geology.

QUAD-GEOMMY

This card game reviews facts about quadrilaterals and simultaneously helps students to analyze general geometrical situations. It is designed for groups of four to six students in grades 8-10.

The same format can be used to teach facts about any type of polygon and to teach circle theorems.

RE-CON

A role-playing game for use in a high school social studies class, RE-CON involves the making of decisions that effect resources and conservation in a small mining town. It is a game in which the entire class can participate.

RE-CON is designed to illustrate a conflict. Other conflict situations can fit into the same general format.

SATISFACTION

This is a role-play game which teaches the natural resources and ways of life in European countries and in regions of the United States. Whole classes of students, grades 5-8, can play.

This game could be adapted for students in lower and higher grades. Countries other than those indicated could be used.

SCHOOL DEMOCRACY

This is a role-play game designed to teach the basic concept of the democratic process. Each child assumes a role as either a parent or a child, with one child as chairman of the meeting. Children discuss and vote on stated issues according to their role cards.

This game can be used in the primary grades. A whole class can participate in the play of the game.

SENTENCE ROLL

This board game teaches students to identify various parts of speech and to apply this knowledge to good sentence structure. Used in the intermediate and junior high grades, it can be played with a flexible number of students, from two to the entire class.

SENTENCE ROLL is uniquely versatile and can be easily adapted to other curricula, especially foreign languages and mathematics.

SHOCK-O

This board game teaches or reviews spelling by having students hear, write, see and read words. Although designed for students of all abilities in grades 3-6, it is especially appropriate for remedial and low ability groups. A whole class of children can play.

The same format can be used for reading instead of spelling and for learning certain facts required in arithmetic. The format could also be used for review purposes instead of teaching, i.e., history or science.

SOLAR-O

This game teaches facts about the nine planets of our solar system. Although designed for grades 4-5, it can be adapted to most grade levels. A whole class can participate.

The same format can be used to teach a range of subjects from functions of parts of the body to characteristics of species of flora.

SPACE RACE

This combination board and role-play game (hybrid) teaches a large number of facts about our solar system and its planets. It is designed for all ability levels in grades 5-8. Nine individuals or nine small teams can play.

By changing the game board and scenario, the teacher could use this game to teach geography in any real or imaginary period exploration.

SPEC-CAT

(Specimens and Categories)

This board game, to be used on a field trip, acquaints students with the characteristics of botanical specimens and with the categories to which these specimens belong. It was designed for ninth grade general science classes, but is easily adaptable to other grade levels. Teams of four students can play.

The same format can be used to teach the identification and classification of almost any available objects.

SPINOBLEND

Designed for second grade students, SPINOBLEND provides drill on the auditory-visual recognition of ten consonant blends and aims at the formation of an instant association of a blend with a given word and phrase. Groups of 10 students may play.

The game can easily be adapted to other grade levels. By constructing new cards, the teacher can use the game in other areas of phonics, such as drill on vowel sounds or digraphs, as well as on consonant blends.

STAY OR GO

STAY OR GO is a role-play game designed to be used in a unit study of the Middle Ages. Its setting is a fictitious feudal manor whose village of serfs is subjected to forces of change and to other influences which try to maintain the status quo. The basic issue of the game is whether or not the serfs will choose to leave the manor; as this issue is explored, the social, political, and economic conditions of the Middle Ages are made apparent. A game which involves the whole class, STAY OR GO is recommended for junior high school grades because of its context.

By rewriting the scenario and roles, the teacher could adapt this game for the study of slavery in the South prior to the Civil War.

STUMP THE STARS

(The Colonization of Pennsylvania)

This is a review game which is designed to test the students' comprehension of Colonial Pennsylvania. It indicates the students' knowledge on various topics, e.g., colonial leaders, significant events of that era. This game also promotes the students' ability to formulate intelligible questions. "The Colonization of Pennsylvania" was designed for grades five and six and can be played with 10-30 children.

This same format can be used in English, math, and science. It could be utilized in grades 3-12, depending on the complexity of the subject matter. A teacher could use the format of "STUMP THE STARS" to determine how much the students already know about a specific topic before studying it so a minimal amount of re-teaching would take place.

SUNNY NUMBERS

SUNNY NUMBERS is a board game designed to teach or review recognition and counting of numerals one through 10. Pupils become familiar with the numerals by seeing, hearing, and repeating them throughout the game. Although designed primarily as a kindergarten first-grade game, applications of this game format could be used for older children who have difficulty in numeral recognition and comprehension.

The same game format can be used replacing the numerals with letters of the alphabet. This game can also be used in certain math processes, e.g., adding and subtracting.

TAKE AND MAKE

TAKE AND MAKE is a phonics game designed to teach initial consonant sounds and the letter which corresponds to each sound. It also teaches or reviews rhyming words. A first and second grade game, TAKE AND MAKE can be played by 20 children, in two circles of 10.

A teacher could substitute blends, such as bl, fl, cr, st, for the single consonant sounds in the game. Word parts other than those given in the game could be used.

WHIZ-MATE

This card game was designed for lower elementary grade pupils to increase their awareness of numbers and numerals 1-10. It can be adapted for higher grade levels by using larger numbers or by using subtraction, multiplication, or division processes.

An able or perceptive child may notice that one can use more complex combinations to make the number eight. For example, instead of using pairs of numerals, a child could play the game finding combinations of three, four or more numerals.

e.g., 8 = 0 + 1 + 7
8 = 2 + 3 + 3
8 = 6 + 1 + 1

8 = 1 + 2 + 3 + 2
8 = 0 + 2 + 5 + 1
8 = 1 + 1 + 1 + 5

WORD TUMBLE

This board game teaches the concepts related to parts of speech, specifically those of verb, noun, pronoun, and adjective. It was designed for intermediate English classes. The game can be played by as few as two children or as many as the entire class.

The playing board from this game can be used in any other area of the curriculum, especially spelling and mathematics.

Y-CHANGE?

This board game is designed to help children develop and/or review the evolutionary concept that life forms change as the physical environment changes. Animal life is stressed over plant forms in the game, but the game materials can be adapted for the study of plant development.

The game can be used in grades 4-12. The basic format of the game can easily be adjusted to lower grade levels to help relate present day animal life to different environments, such as deserts, mountains, and marshes.

DESCRIPTIONS OF GAMES

AQUA MATH

I. Overview.

This board game is designed to help the child master the concepts of basic math facts (addition, subtraction, multiplication, and division). It incorporates the use of the open sentence, frame, number sentence, and number line into the learning of these skills. Suggested for use in the primary and low intermediate grades, the game is one which can be played by as few as two children or by as many as the entire class.

The same format can be used to teach spelling.

II. Objectives.

A. Behavioral.

1. Given the following 40 number sentences which are found in the game (see Appendix B), the child should be able, without the aid of any reference materials, to write the correct answers to at least 30 of the facts, thus demonstrating his intuitive understanding of numbers.

2 + 9 = ☐
3 + 4 = ☐
3 + 9 = ☐
4 + 7 = ☐
5 + 6 = ☐
6 + 2 = ☐
6 + 7 = ☐
7 + 2 = ☐
8 + 4 = ☐
9 + 4 = ☐

5 - 5 = ☐
7 - 2 = ☐
9 - 4 = ☐
10 - 4 = ☐
11 - 6 = ☐
12 - 4 = ☐
12 - 9 = ☐
13 - 8 = ☐
15 - 6 = ☐
18 - 8 = ☐

2 ones = ☐
2 fours = ☐
2 sixes = ☐
2 nines = ☐
3 threes = ☐
3 fours = ☐
4 twos = ☐
5 twos = ☐
5 threes = ☐
6 twos = ☐

How many ones in 3?
How many ones in 5?
How many ones in 4?
How many ones in 10?
How many ones in 3?
How many ones in 6?
How many ones in 12?
How many ones in 18?
How many ones in 12?
How many ones in 16?

2. Given the following 20 addition facts not found in the game, the child, with the aid of a number line, should be able to show that he understands the relationship of addition and subtraction by writing the inverse operation of addition, e. g., subtraction (Example: ⑨ + $\overset{1}{\triangle}$ = 10, therefore $\boxed{10} - \triangle =$ ⑨ or $\boxed{10} -$ ⑨ $= \triangle$). The lower limits of acceptable performance will be 16 correct responses in a 20 minute period.

1 + 3 = ☐

1 + 5 = ☐

1 + 8 = ☐

2 + 3 = ☐

2 + 6 = ☐

2 + 8 = ☐

3 + 3 = ☐

3 + 7 = ☐

3 + 8 = ☐

4 + 2 = ☐

4 + 3 = ☐

4 + 8 = ☐

5 + 1 = ☐

5 + 4 = ☐

5 + 5 = ☐

5 + 8 = ☐

6 + 6 = ☐

7 + 3 = ☐

8 + 8 = ☐

9 + 6 = ☐

3. Given the following 20 number sentences which involve both the multiplication and division processes, the child should be able to show that he understands the relationship of multiplication and division by supplying the correct products and quotients of at least 14 of the problems in a 15 minute period.

5 threes = ☐ ; How many threes in 15?

3 fours = ☐ ; How many fours in 12?

5 twos = ☐ ; How many twos in 10?

2 sixes = ☐ ; How many sixes in 12?

3 threes = ☐ ; How many threes in 9?

4 ones = ☐ ; How many ones in 4?

4 twos = ☐ ; How many twos in 8?

2 nines = ☐ ; How many nines in 18?

1 five = ☐ ; How many fives in 5?

2 threes = ☐ ; How many threes in 6?

6 ones = ☐ ; How many ones in 6?

2 eights = ☐ ; How many eights in 16?

2 twos = ☐ ; How many twos in 4?

2 fives = ☐ ; How many fives in 10?

3 twos = ☐ ; How many twos in 6?

6 twos = ☐ ; How many twos in 12?

2 sevens = ☐ ; How many sevens in 14?

5 ones = ☐ ; How many ones in 5?

4 threes = ☐ ; How many threes in 12?

2 fours = ☐ ; How many fours in 8?

B. General.

1. The learner should undergo meaningful experiences (such as using number lines and manipulating concrete representations) which should help him discover solutions to problems.
2. The learner should develop a readiness for the further study of mathematical ideas and concepts by practicing fundamental mathematical concepts.

III. Materials and Game Components.

A. Needed Materials.

1. . 21 sheets of yellow oaktag paper (18" X 24"). Each sheet if for six Fish Number Cards used in the game. See Appendix A for illustration of Fish Number Cards. 'Three sheets for Baby Fish. (See Appendix A.)
2. 108 giant paper clips. (One is glued to each Fish Number Card used in the game.)
3. 2 slender branches from a tree to represent fishing poles.
4. 2 small horseshoe magnets.
5. 2 sections of cord, each 36" in length.
6. 2 dowel sticks, each 36" in length.
7. 2 "net" cabbage bags. ("Net" orange bags can be substituted.)
8. 2 wire coat hangers.
9. 2 one-quart berry baskets. (Small boxes can be substituted.)
10. 1 bottle of Elmer's Glue-All.
11. 1 large cardboard box used to represent the fishpond.
12. 18 sheets of 22" X 28" poster board (eight white, three yellow, one blue, two red, two green, two orange).
13. 8 brass fasteners.
14. 2 felt-tip markers (red, black).
15. Yardstick.
16. Chalkboard compass (optional if one is unavailable, attach a string to a piece of chalk).
17. Protractor.
18. Compass.

B. Construction of Game Components.

1. Fishpond:
   Line cardboard box with a sheet of blue poster board.
2. Fishnets (Construct two):
   a. Sew the "net" cabbage bags onto bent coat hangers.
   b. Tape dowel sticks onto the ends of the coat hangers. (See Appendix A for illustration of fishnet.)
3. Fishpoles:
   a. Attach a cord to each slender branch.
   b. Attach a horseshoe magnet to the end of each cord.
4. Fish Number Card:
   a. Trace and cut 6 Fish Number Card from each sheet of yellow oaktag paper. (See Appendix A for exact model and size.)
   b. Place an open sentence on each of the Fish Number Cards (see Appendix B for these addition, subtraction, multiplication, and division number sentences).
   c. Glue a paper clip to the reverse side of each Fish Number Card. (Fewer or additional Fish Number Cards can be constructed. The number depends upon how many basic number facts the teacher wishes the child to learn. However, it should be noted that if fewer Fish Number Cards are constructed, perhaps not all the behavioral objectives in the game can be met.)

5. Baby Fish Cards:
   Cut and trace 100 Baby Fish Cards from yellow oaktag paper (see Appendix A for exact model and illustration).
6. Tape Measure Number Line:
   a. Use yellow poster board to construct two Fish Measure Number Lines (4" X 28").
   b. Use a black felt-tip marker to write numerals 1-27 on these strips of poster board (the poster board strip is 28" long; therefore, place each numeral on each of the inch markers).
7. Baby Fish Pond:
   a. Line each quart berry basket with blue poster board.
   b. Place 50 Baby Fish into each basket.
8. Giant Fish Checkers: (Eight checkers are needed. Each team will be given an addition, subtraction, multiplication and division Fish Checker.)
   a. Lower Numeral Disk.
      (1) From the white poster board, cut out eight disks, 18" in diameter.
      (2) Section each of the eight disks into 27 equal sections by locating the center of the circle and lightly drawing lines from the center to the perimeter. (Use protractor since the angles must be precise.) From the center or vertex of the circle, locate the following points on one of the radii : 3", 4¼", 5¼", 6½" and 8". Use compass to draw circles lightly on the disks at these exact locations. Use this same procedure to locate the precise points on each of the additional seven disks.
      (3) On each of two separate disks, place numerals which relate to the addition facts found in the game. Follow the same procedure for numerals which relate to the subtraction, multiplication, and division facts. (See Appendix C for complete illustrations of the disks and positioning of the numerals.)
   b. Body of the Fish Checker (cover to be placed on the lower disk).
      1. Cut a large fish (see Appendix D for exact specifications and illustration) from each of the remaining eight sheets of colored poster board (two each- red, orange, yellow, and green).
      2. Determine the exact positions of the apertures by locating the same angle and positions from the center of the body as were found on the Lower Numeral Disk (see Appendix D). Cut out the three apertures. (Notice on the illustration that the position of the mouth is one segment lower than the segment directly opposite the one in which the other two apertures were cut.)
      3. Fasten with brass fasteners the two bodies of the yellow fish checkers onto the two separate Lower Numeral Addition Disks.
      4. Follow the same procedure and fasten the bodies of the green fish checkers onto the two separate division Lower Numeral Disks, the orange bodies onto the separate multiplication Lower Numeral Disks, and the red onto the separate subtraction Lower Numeral Disks. (The eight Lower

Numeral Disks of the fish checkers will rotate freely beneath the colorful poster board fish cover. (The strategic apertures should reveal the number sentence and the answer from the Lower Numeral Disk.)

5. Use the black felt-tip marker to write the numerals which appear through the two apertures at the left of the Fish Checker. Use red felt-tip marker to write the numerals that supply the answers.

6. On the addition Fish Checker (see Appendix D), place a plus sign between the two apertures at the left. Place a minus sign on the subtraction Fish Checker and print the sentence, "How many □ in □?" on the division Fish Checkers. The multiplication Fish Checkers do not need any signs or questions written on them. (See Appendix D for the exact locations of the signs, etc. written on Fish Checkers.)

IV. Procedures.

A. A team of six to eight children can play AQUA MATH. Assign Team A (four pupils) to one side of the fish pond and assign Team B (four pupils) to the opposite side.

B. Give each team a net, fish pole, four Fish Checkers (addition, subtraction, multiplication, and division), a Tape Measure Number Line, and a Baby Fish Pond which contains a school of 50 Baby Fish Cards.

C. A member of Team A places his fishpole in the pond and catches a Fish Number Card. (The magnet on the pole will attract the paper clip on the fish.) The player reads the problem on the Fish Number Card. If the correct answer is given, and there is no challenge from the opposite team, both teams dial the Fish Checker and verify the answer. If the answer is correct, Team A "nets" the fish. Before anyone can "net" a fish, the Fish Checker must be consulted by both teams and the answer verified.

D. If a child gives an inaccurate response to the problem and a member of Team B challenges him, the member of Team B may correct the answer but must also prove that his answer is the correct one. He does this by arranging the Baby Fish into sets, translating the problem situation into a number story or sentence, and supplying the correct answer. (Example, $4 + 2 = \boxed{}$. "I have four fish and caught two more. Now I have six fish" or a mere "Two fish and four fish are six fish.") Both teams consult the Fish Checker. The team that provides the correct answer "nets" the fish.

E. If a member of a team catches a fish from the pond and has difficulty determining the answer, he is permitted to analyze the problem by employing his school of Baby Fish. (This offers a visualization of the problem by employing concrete representations.) The player may also use his number line to discover the answers. If the player solves the problem, his team is permitted to "net" the fish.

F. If an incorrect response is given and the opposite team offers no challenge, both teams consult the Fish Checkers, become aware of the inaccuracy, and one of the members tosses the fish back into the pond.

G. Each team takes a turn until all the fish have been caught and netted.

. Win Criteria.

Each team counts the fish in its net. The team with the most fish wins.

I. Debriefing.

A. The following questions may be appropriate:
1. Why do you think you won the game?
2. How many fish did you catch, Team A?
3. How many fish did you catch, Team B?
4. Why do you think you caught fewer fish?
5. How did the Fish Checkers help you?
6. How did the Baby Fish help you discover the answers to the problems that you didn't know?
7. Did you use the number line? How did it help you solve your problems for addition? multiplication? subtraction? division? (Have children relate their experiences).
8. Which did you prefer to use to help you discover answers to the problems -- the number line or Baby Fish? Why?
9. Which problems seemed difficult for you?
10. If you play the game again, what do you think you could do to make sure that you win?

B. A possible and optional activity to introduce the word, set. (Place 12 Baby Fish in the Fishpond or on the flannelboard. them in any order.) Ask "How many fish do we have in the pond? Suppose three of the fish began to swim in this direction." (Have child place three fish in one direction.) "Three fish swim in this direction." (Child places three in another direction.) "Three swim in this direction." (Child places three in third direction.) "Three swim in this direction." (Child places three fish in a fourth direction.) "How many groups or sets of fish do we have? How many fish do we have? How many fish are in each set? What have we done?" ("Yes, we've separated or divided them into sets.") "Now in the center of the pond is a big fly which these fish would like to have for a meal. What do you think the fish will do?" (Show the representation.) "What have we done. Yes, we've added $3 + 3 + 3 + 3 = \boxed{12}$ or we can say that four threes are 12 or $4 \times 3 = \boxed{12}$. Now let's suppose a fisherman just like you came to this pond. He thought that he'd catch more fish than that, so guess what he did with these three Baby Fish." (A Fish Checker or the Number Line can be employed to prove the answer.)

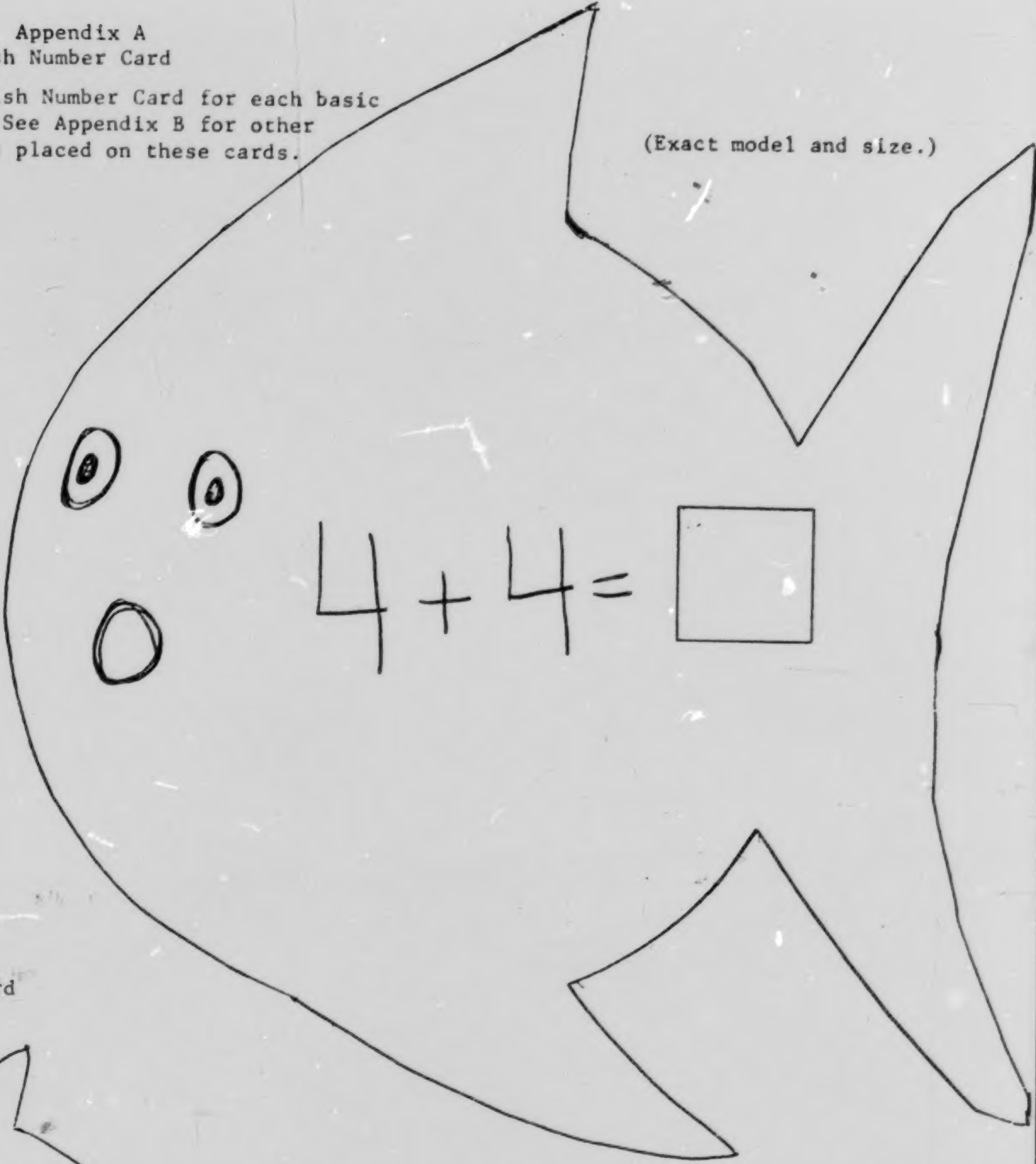
C. Test according to the behavioral objectives.

II. Results of Tryout.

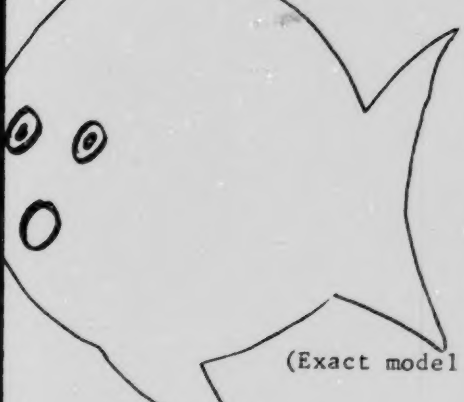
Appendix A
Fish Number Card

onstruct a Fish Number Card for each basic act taught. See Appendix B for other pen sentences placed on these cards.

(Exact model and size.)



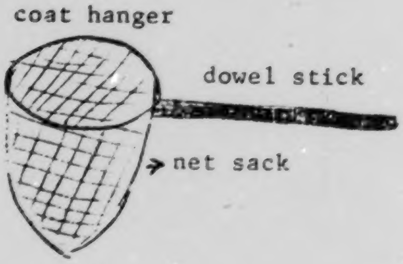
Baby Fish Card



Construct 100 Baby Fish, 50 for each team.

(Exact model and size.)

Fish Net


coat hanger
dowel stick
net sack

Appendix B

Addition:

0 + 6 = ☐
0 + 8 = ☐
1 + 7 = ☐
2 + 5 = ☐
2 + 9 = ☐
3 + 2 = ☐
3 + 4 = ☐
3 + 6 = ☐
3 + 9 = ☐

4 + 4 = ☐
4 + 5 = ☐
4 + 7 = ☐
4 + 9 = ☐
5 + 3 = ☐
5 + 6 = ☐
6 + 2 = ☐
6 + 4 = ☐
6 + 7 = ☐

6 + 9 = ☐
7 + 2 = ☐
7 + 5 = ☐
7 + 8 = ☐
8 + 4 = ☐
8 + 6 = ☐
9 + 1 = ☐
9 + 4 = ☐
9 + 8 = ☐

Subtraction:

4 - 0 = ☐
4 - 2 = ☐
5 - 5 = ☐
6 - 3 = ☐
6 - 4 = ☐
7 - 2 = ☐
8 - 1 = ☐
8 - 3 = ☐
9 - 4 = ☐

9 - 6 = ☐
10 - 4 = ☐
10 - 7 = ☐
10 - 8 = ☐
11 - 3 = ☐
11 - 4 = ☐
11 - 6 = ☐
12 - 4 = ☐
12 - 8 = ☐

12 - 9 = ☐
13 - 6 = ☐
13 - 8 = ☐
14 - 6 = ☐
14 - 7 = ☐
15 - 6 = ☐
15 - 8 = ☐
17 - 9 = ☐
18 - 8 = ☐

Multiplication:

1 one = ☐
1 two = ☐
1 three = ☐
1 four = ☐
1 five = ☐

2 fours = ☐
2 fives = ☐
2 sixes = ☐
2 sevens = ☐
2 eights = ☐

3 fours = ☐
4 ones = ☐
4 twos = ☐
4 threes = ☐
5 ones = ☐

1 six = ☐

2 ones = ☐

2 twos = ☐

2 threes = ☐

2 nines = ☐

3 ones = ☐

3 twos = ☐

3 threes = ☐

5 twos = ☐

5 threes = ☐

6 ones = ☐

6 twos = ☐

Division:

How many ones in 2?

How many ones in 3?

How many ones in 4?

How many ones in 5?

How many ones in 6?

How many twos in 2?

How many twos in 4?

How many twos in 6?

How many twos in 8?

How many twos in 10?

How many twos in 12?

How many threes in 3?

How many threes in 6?

How many threes in 9?

How many threes in 12?

How many threes in 15?

How many threes in 18?

How many fours in 4?

How many fours in 8?

How many fours in 12?

How many fours in 16?

How many fives in 5?

How many fives in 10?

How many fives in 15?

How many sixes in 6?

How many sixes in 12?

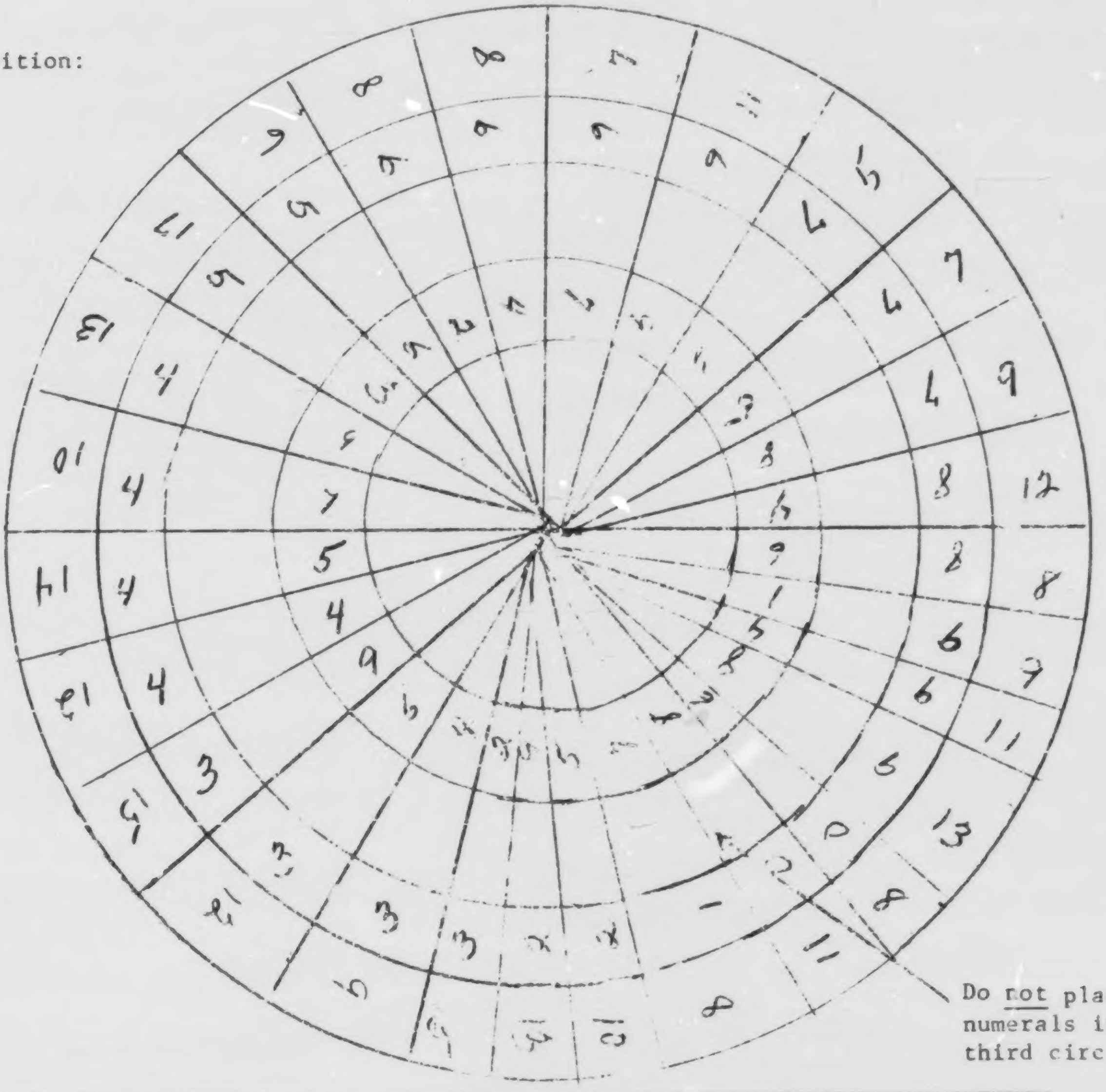
How many sixes in 18?

Appendix C

The Lower Numeral Disks for the Giant Fish Checkers

White poster board should be used for the lower disks. The measurements must be precise so that these numerals will appear through the aperture of the top disk. (Use pencil to place numerals on disk, in case of error.)

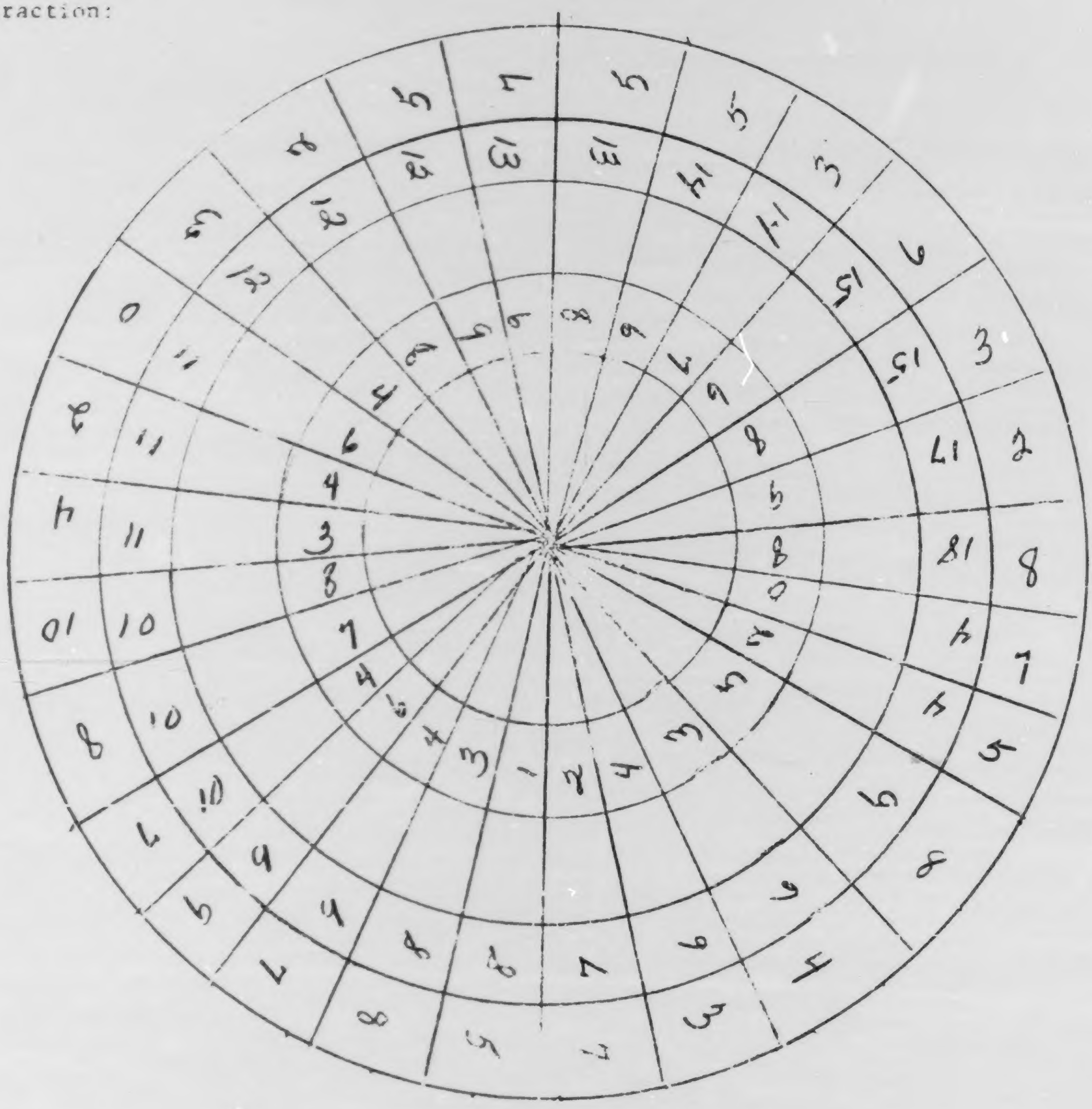
Addition:


Do not place any numerals in the third circle.

18" in diameter

The Lower Numeral Disk for the Giant Fish Checkers

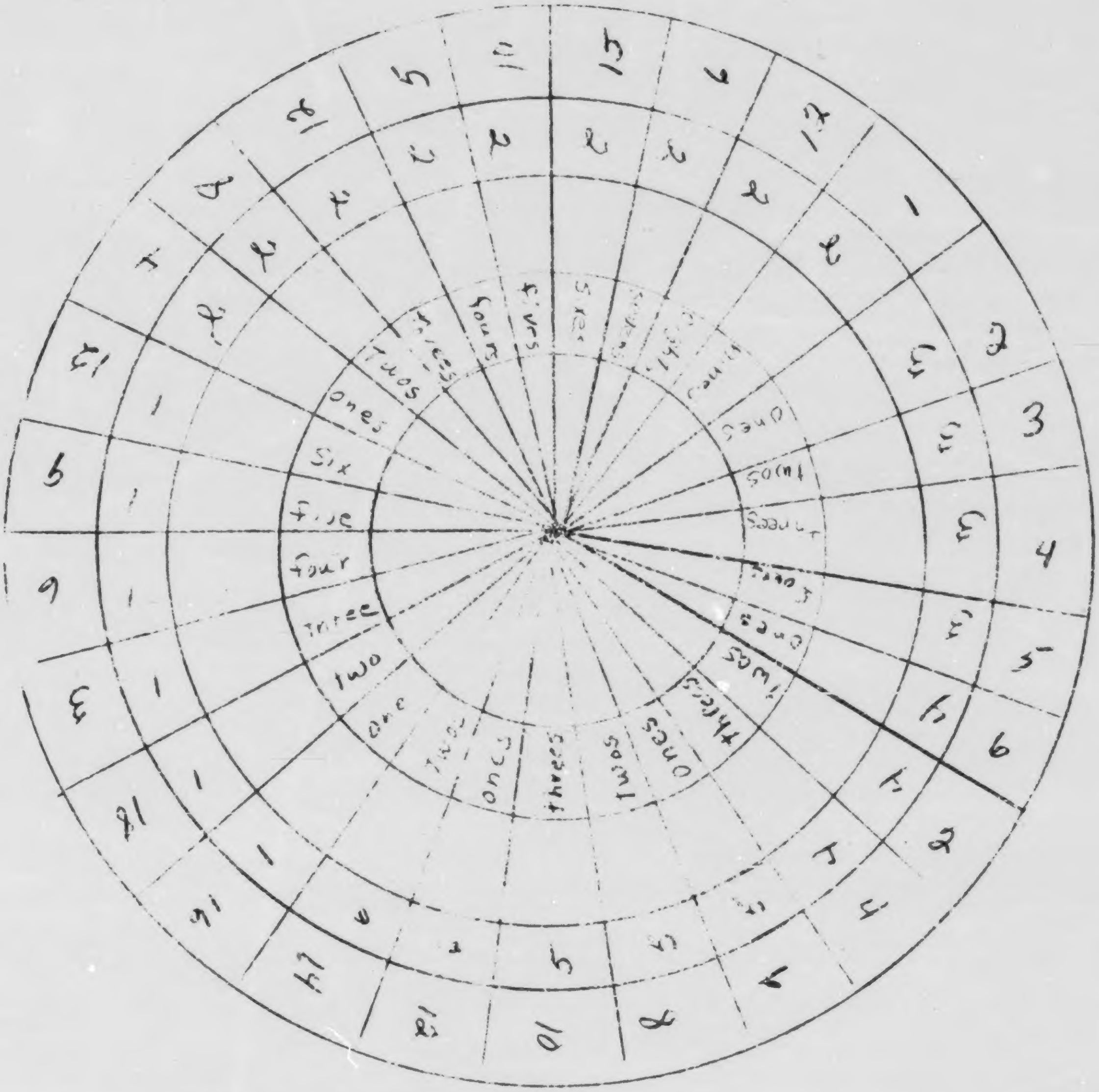
Subtraction:



18" in diameter

The Lower Numeral Disk for the Giant Fish Checkers

Multiplication:

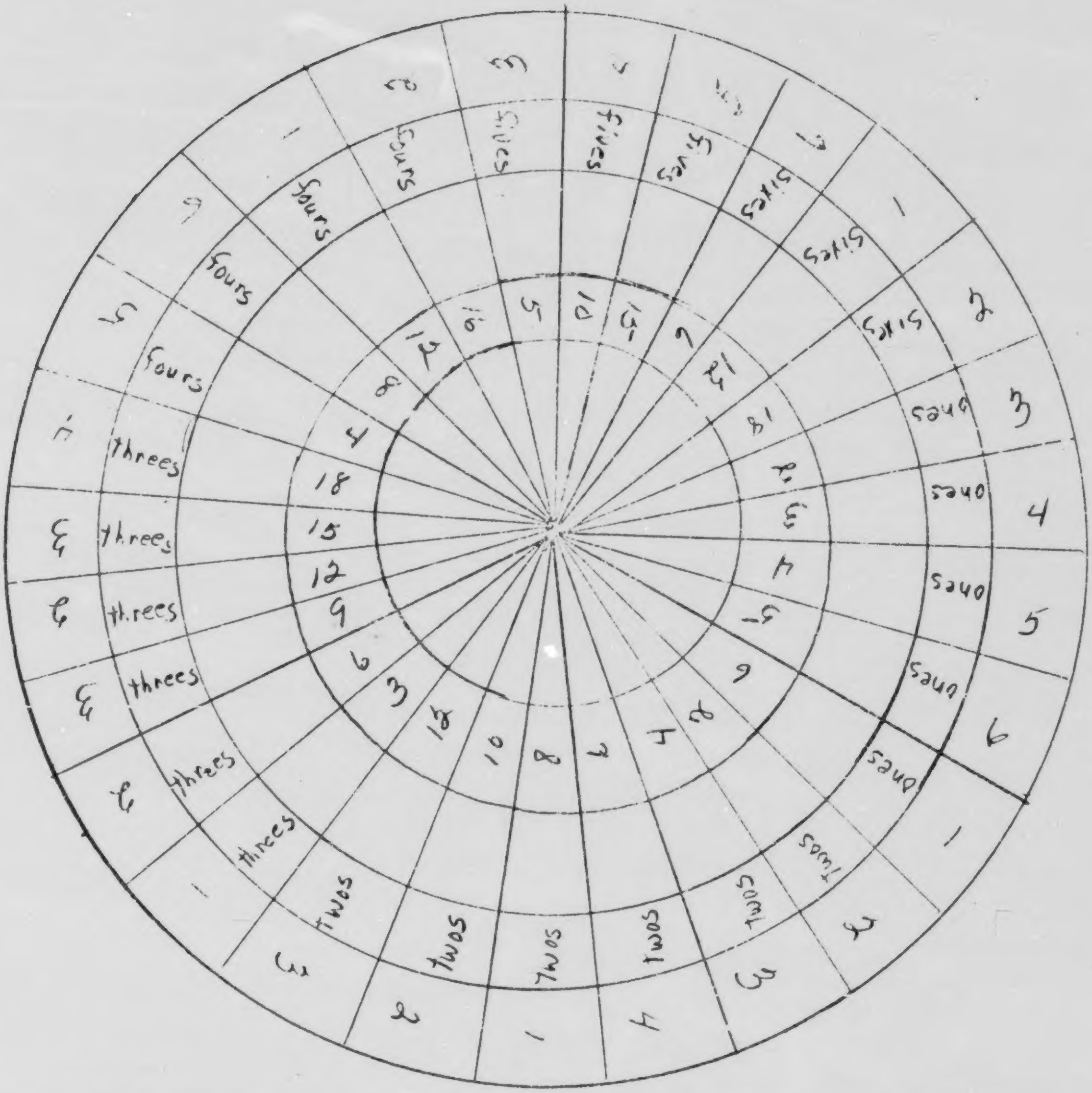


ones
twos
threes
fours
fives
sixes
ones
twos
threes
one
two
three
four
five
six

18" in diameter

The Lower Numeral Disk for the Giant Fish Checkers

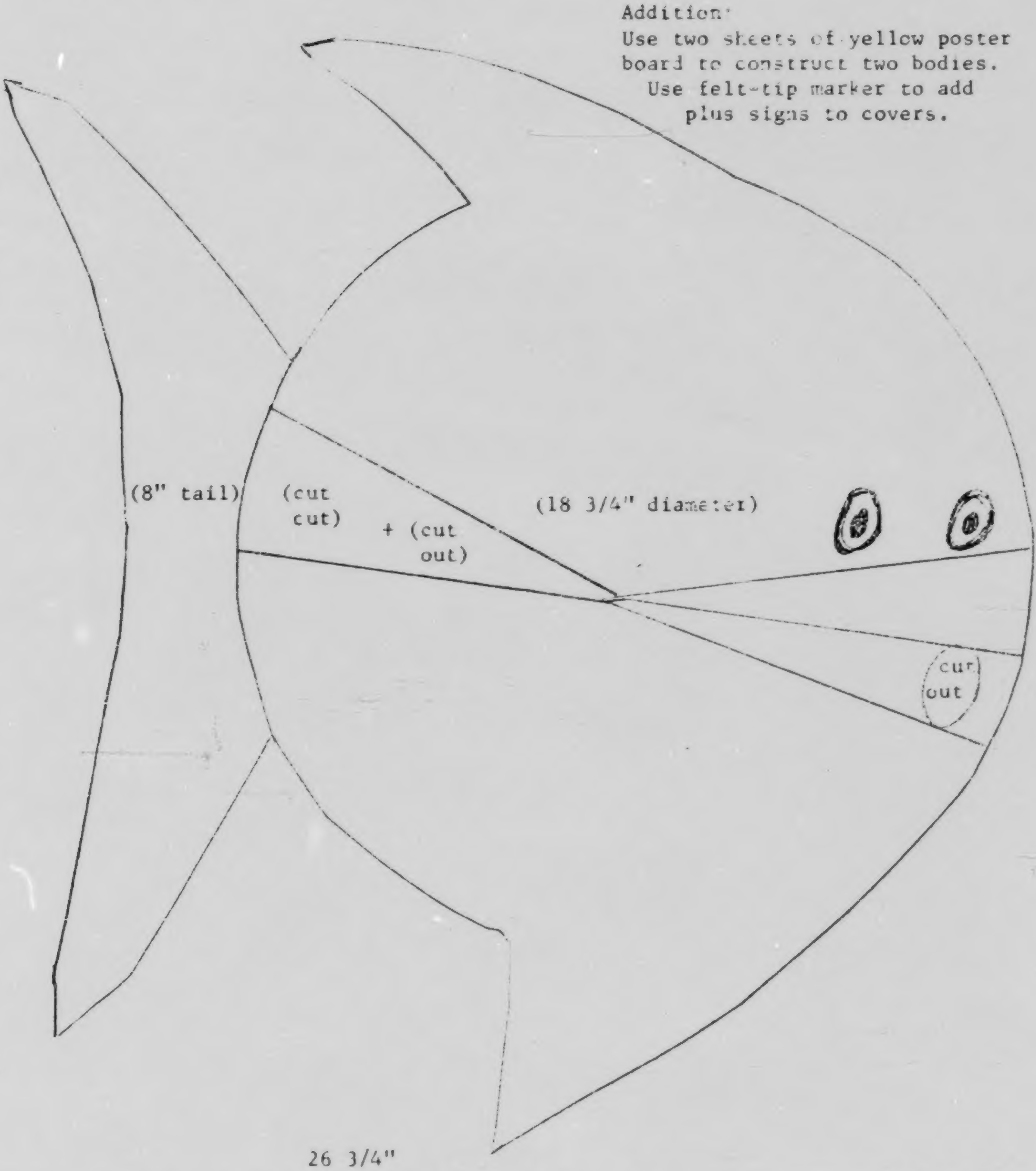
Division:


fives
fives
sixes
sixes
sixes
ones
ones
ones
ones
ones
twos
twos
twos
twos
twos
twos
threes
threes
threes
threes
threes
threes
fours
fours
fours
fours
fives
10
15
6
12
18
21
24
27
30
9
8
7
4
10
12
3
6
9
12
15
18
4
8
12
16
5
1
2
3
4
5
6
1
2
3
4
1
2
3

18" in diameter

Appendix D

Bodies of Fish Checkers (Covers for lower addition numeral disks)

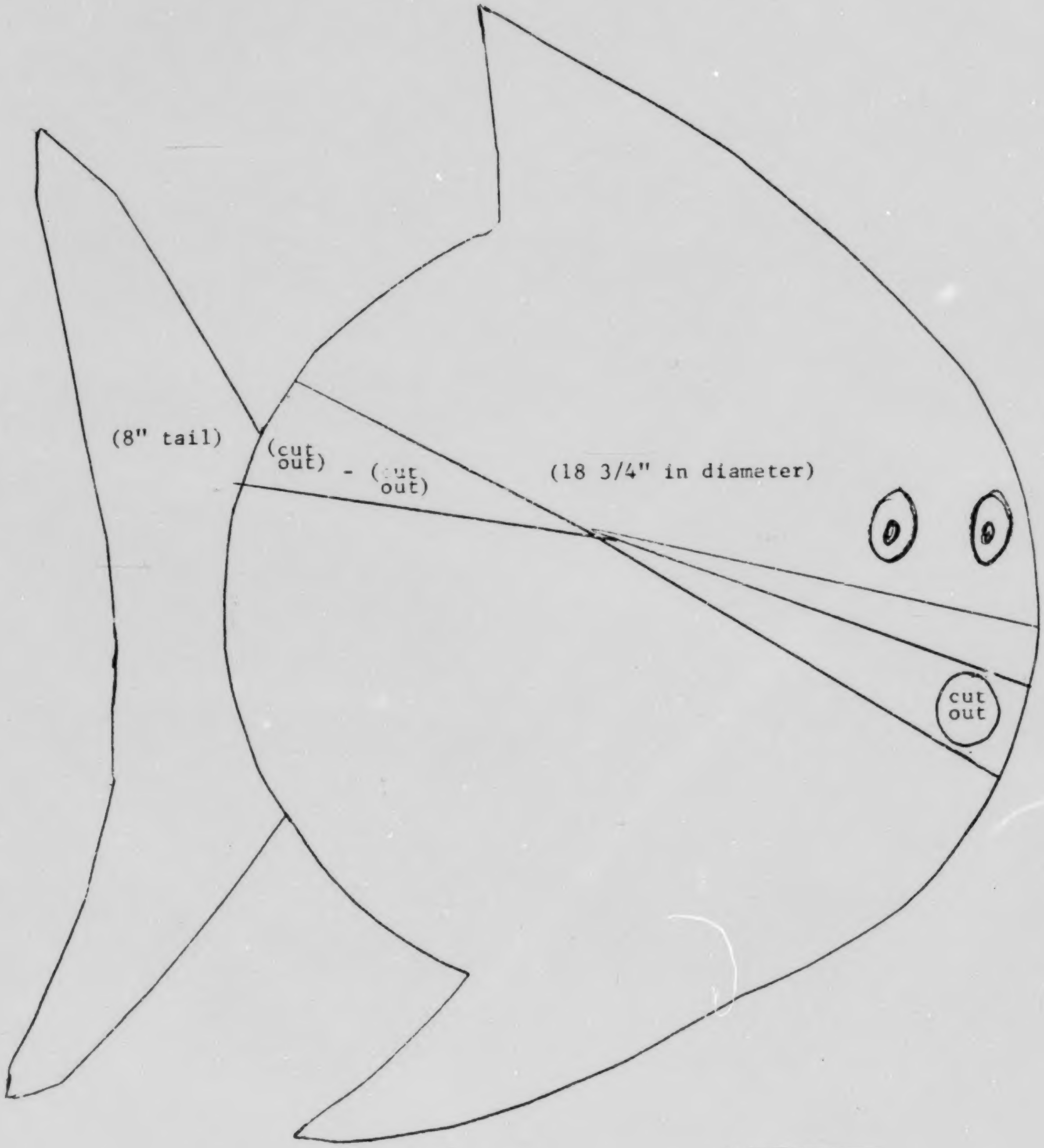

Addition:
Use two sheets of yellow poster board to construct two bodies. Use felt-tip marker to add plus signs to covers.
(8" tail)
(cut cut)
+ (cut out)
(18 3/4" diameter)
cut out
26 3/4"

8" tail plus 18 3/4" in diameter of circle

Note: The position of the mouth is one segment lower than the segment directly opposite the one in which the other two apertures were cut.

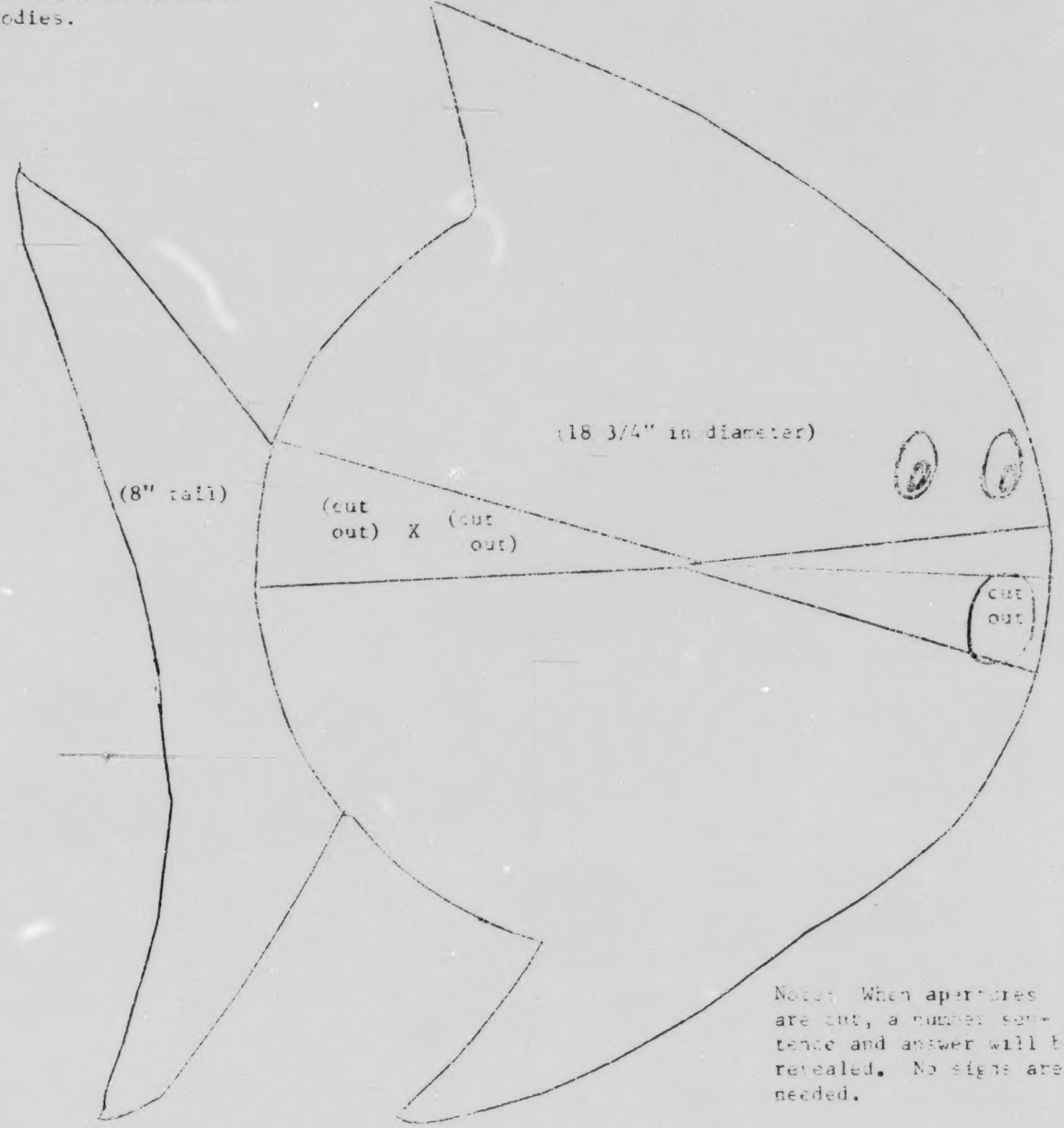
Bodies of Fish Checkers
(Covers for lower subtraction numeral disks).

Subtraction:
Use two sheets of red poster board to construct two bodies. Use black felt-tip marker to add minus signs.


(8" tail)
(cut out)
- (cut out)
(18 3/4" in diameter)
cut out

Bodies of Fish Checkers
(Covers for lower multiplication numeral disks).

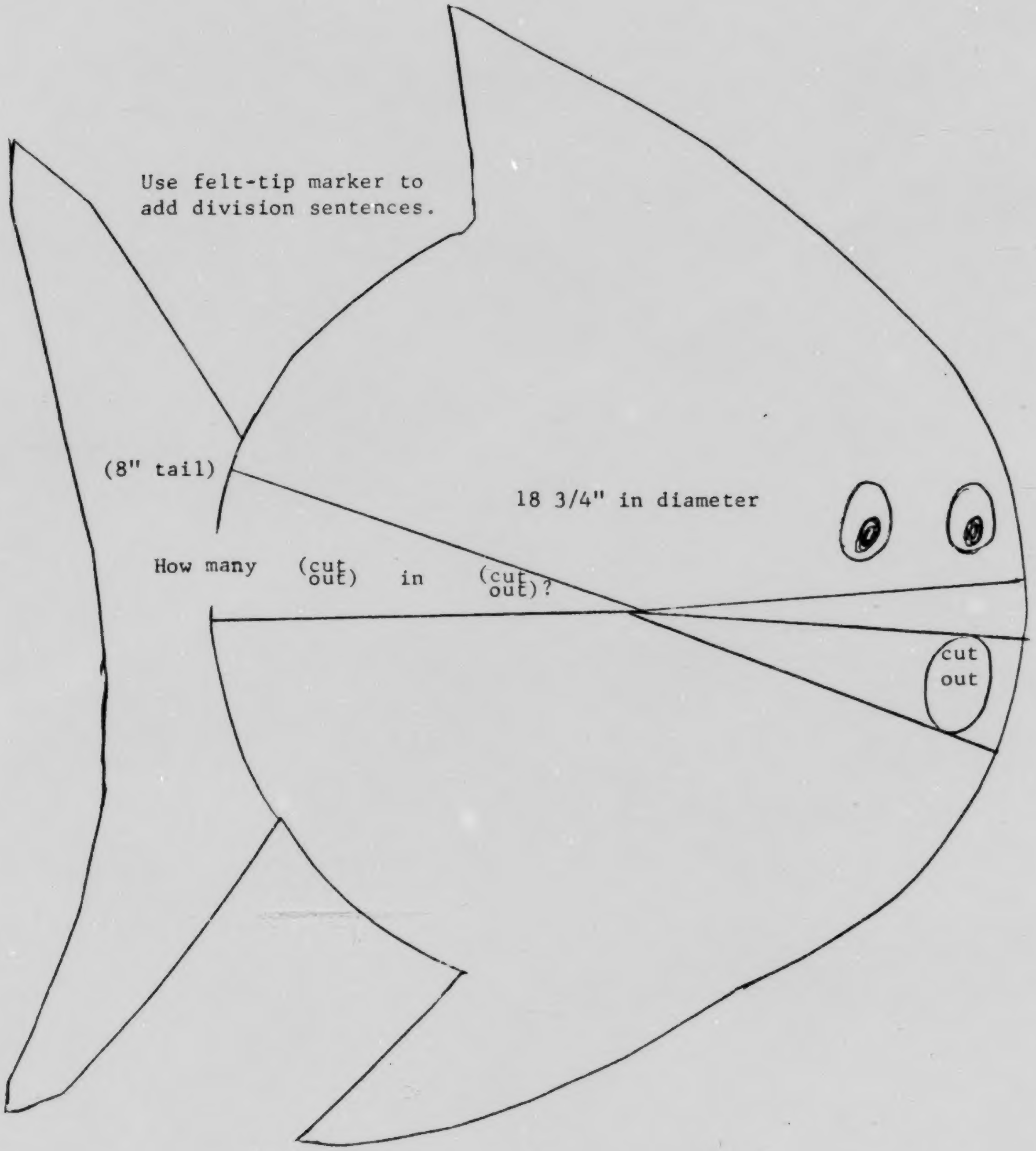
Multiplication:
Use two sheets of orange
poster board to construct
two bodies.


(8" tail)
(18 3/4" in diameter)
(cut out)
X
(cut out)
cut out

Note: When apertures are cut, a number sentence and answer will be revealed. No signs are needed.

Bodies of Fish Checkers
(Covers for lower division numeral disks)

Division:
Use two sheets of yellow poster board to construct two bodies.


Use felt-tip marker to add division sentences.
(8" tail)
18 3/4" in diameter
How many (cut out) in (cut out)?
cut out

BID-A-WORD

I. Overview.

This hybrid role-play and board game promotes the learning of prefixes in the junior high grades.

This game could also be used to teach the meaning of suffixes. It could also be used to provide drill in foreign language study: for example, verb endings.

II. Objectives.

A. Behavioral.

1. Given the following 20 definitions and selection of prefixes and root words:

    Definitions
    - a. To carry across
    - b. To turn across
    - c. To carry a message
    - d. To go back, withdraw
    - e. To express disapproval of
    - f. To turn back
    - g. To go before or in front of
    - h. To write at the beginning as a direction
    - i. To carry away
    - j. To write an account of
    - k. To put down
    - l. To demonstrate invalidity; to prove wrong
    - m. To carry into
    - n. To make better
    - o. To put upon
    - p. To carry away
    - q. To put out on show
    - r. To go along with; to acknowledge
    - s. To talk together
    - t. To write as a lasting record.

    Prefixes:
    Trans, Re, Pre, De, Im, Ex, Con, In

    Root words:
    Port, Cede, Scribe, Prove, Verse, Pose

    the student should be able to match a prefix to a root-word to make a word to correspond to each of the given definitions, with at least 90% accuracy.

2. Given the following list of 20 words involving prefixes:
    - a. depose
    - b. disprove
    - c. improve
    - d. transverse
    - e. report
    - f. improve
    - g. recede
    - h. converse
    - i. inscribe
    - j. export
    - k. concede
    - l. expose

m. deport
n. reprove
o. prescribe
p. transport
q. precede
r. describe
s. reverse
t. impose

the student should be able to write correct definitions for at least 80% of them.

B. General.
1. The student should be able to recognize the effect of a given prefix on different roots.
2. The student should be able to use a dictionary more efficiently.

III. Materials and Game Components.

A. Needed Materials.
1. Construction paper of two different colors for prefix and root word/definition cards.
2. Construction paper to be used as score cards (one sheet for each student in the class).
3. A set of dictionaries, all alike, one for each student in the class.
4. Paper and pencil for each student.
5. Envelopes (one for each student).
6. Counters to represent money (45 coins per student).

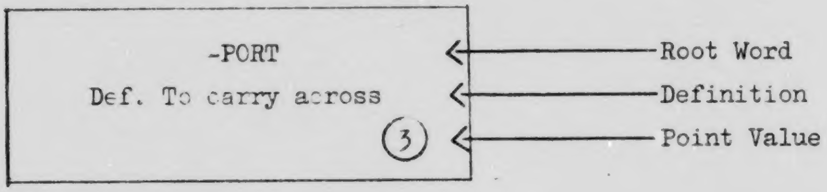
B. Construction of Game Components.
1. Game cards:

Cut construction paper of two different colors into cards. On one color, write various prefixes; on the other, write various root words and definitions (suggested words are given in section II; others can be taken from a specific dictionary which the students will use). The root word/definition cards are assigned point values of 5, 3, 2 or 1; these are written in the lower right corner of each card (see diagram).

a. Prefix cards:

etc.

b. Root word/definition cards:



2. Score Cards:

Construct score cards according to the following diagram:

BIDDING ROUND #1		SCORE
WORD	DEFINITION	
BIDDING ROUND #2		
BIDDING ROUND #3		
MONEY SCORE (1 pt. per 10 coins)		
TOTAL SCORE		

3. Set of dictionaries (see IV, A, 3).
4. Student packets:
   Envelopes containing counters to represent money (45 coins per student).

C. Roles.
   1. Auctioneer (one member of class).
   2. Bidders (remainder of class).
   3. Clerk (teacher or competent student).

IV. Procedures.

A. Each student receives:
   1. Five root word/definition cards (one of 5 point value, one of 3 point value, one of 2 point value, and two of 1 point value).
   2. An envelope containing 45 counters or pennies for use during the entire game.
   3. Paper and pencil.
   4. A dictionary.
   5. A score card.

B. To begin, seven prefixes, either selected by the teacher or chosen randomly from a pack of prefix cards, are placed for bid by the auctioneer.

C. Students are given five minutes (or a time period suitable to their ability) in which to use the dictionary to look up and check words which can be formed by combining any of the prefixes for bid with any of their root words, to see if the complete words would fit the given definitions.

D. At the end of this five minute period, bidding takes place:
   1. The auctioneer auctions off one prefix at a time, selling to the highest bidder.
   2. The bidder claiming the prefix must justify his claim by reading his complete word and following it by the given definition.
   3. The CLERK either accepts the word as correct or rejects it. (Some discussion may take place at this stage if a word is rejected, to see

how the error occurred.)

4. If a word is rejected, the bidder must return his prefix to the auctioneer and forfeit the money he paid for it. The prefix can then be re-auctioned.
5. Auctioning continues in this manner until all prefixes are either sold or unwanted, which marks the end of bidding round #1.

E. Students enter their score for round #1 on their score cards, filling in the words and definitions for which they gained points, and the number of points gained.

F. Round #2 is played exactly as round #1, using new prefixes and re-dealing root word/definition cards.

G. Round #3 is played exactly as round #1 (number of rounds can be varied as desired).

H. Each student counts his remaining money and scores one point for every 10 coins. These points are entered on the score card.

I. Scores are totalled.

V. Win Criteria.

The student with the highest score wins.

VI. Debriefing.

A. Some debriefing takes place during the game when words are checked by the clerk. For example, these questions might arise:

1. Why is your word the wrong word for the definition?
2. What made you think the word was correct?
3. What does your word really mean?

B. After the game is completed:

1. Ask winner as to why he won. Answers might include: values of his definition cards; luck of the deal; rapid and accurate use of dictionary; wise use of money in proportion to the value of his words; demand for a certain prefix, etc.
2. Ask the rest of the class why they did not win. Answers might include: overspent on a prefix of small value; unlucky cards dealt; slow in using the dictionary; mistakes with words; prefixes needed were of more value to someone else, etc.

C. Test according to the behavioral objectives.

VII. Results of Tryout.

BOLIGUAY

I. Overview.

A role-play game, BOLIGUAY teaches about interest groups and problems in a Latin American country. In "Boliguay," a fictitious country, four interest groups attempt to influence a legislative decision. Designed for use with sixth graders, this game can easily be adapted for use at the secondary level. Entire classes can play.

By rewriting the roles and scenario, a teacher could use this game to study the legislative process in a European country, an African country, the United States, etc.

II. Objectives.

A. Behavioral.

1. Given no reference materials, the student should be able to list the four interest groups named in Appendix B.
2. Given a scrambled list of the characteristics of the various interest groups (found in the roles in Appendix B) and the names of the groups, the student should be able to match each characteristic to the proper group.
3. Given no reference materials, the student should be able to list four major needs of underdeveloped countries. These needs are mentioned in the roles (see Appendix B) and include:
    a. education
    b. development of natural resources
    c. improvement of health standards and facilities
    d. economic development

B. General.

1. The student should gain insight into the interactions of interest groups in a society.
2. The student should better understand the connection between geography and economic, political, and social conditions in a country.
3. The student should be able to perceive that cooperation between interest groups is necessary for progress.
4. The student should gain a better understanding of the problems of underdeveloped nations.

III. Materials and Game Components.

A. A scenario describing the social, economic, and political conditions of "Boliguay" for each player (see Appendix A).

B. Group roles containing instructions for members of the Congress (see Appendix B).

C. Roles for players on each team; i.e., industrialists, hacienda owners, peons, and small farmers (see Appendix B). These roles contain the characteristics of each team as well as their needs and goals.

IV. Procedures.

A. Time Period 1:

1. Assign four students to each interest group; the remaining pupils are members of the Congress.
2. Give each player a general scenario and his role.
3. Describe the game to the class and explain the win criteria (see section V).

4. Allow time for students to read their scenarios and roles.

B. Time Period 2:
   1. Each interest group chooses its own chairman or spokesman. A member of Congress is also elected as speaker.
   2. For several minutes, interest groups discuss their goals and ways these may be attained. Then the chairman of each interest group addresses the Congress.

C. Time Period 3:
   1. Conduct a voting session in which each player orally states his vote for a particular project. Each interest group receives a block of nine votes, and each member of Congress receives one vote. Since a majority (depending on number of pupils) is necessary for approval of a project, it is not likely that a project will be approved in the first round of voting.
   2. The teacher or an appointed student tallies the votes on the board so that players can see how each particular group is voting.

D. Time Period 4:
   1. Instruct the interest groups that in order to get the votes necessary to pass any project, they are going to have to form partnerships or coalitions with one or more of the other groups. They may have to switch from their preferred goal to their second preference.
   2. Allow the interest groups to bargain with each other. Each chairman should keep the sessions organized and do the bargaining; he can be advised by other members of his team. Alliances or partnerships can be formed.
   3. At the same time as (2.) above, Congress (controlled by the speaker) has a general debate of the issues.

E. Time Period 5:
   1. Again Congress and the interest groups orally state their votes.
   2. If there is no winner, proceed to Time Period 6.

F. Time Period 6:
   1. Interest groups continue bargaining and forming new coalitions. Three groups may have to unite.
   2. Allow coalitions to address Congress to sway votes.

G. Time Period 7:
   1. Congress and coalitions vote for the final time.
   (Note: It is possible that during the time alloted the game, no project will win. Should this occur, it can be pointed out to students that Congresses are frequently stalemated in this way because of vested interest groups and their failure to compromise and cooperate successfully.)

V. Win Criteria.

Supporters of the project which first receives a majority vote are declared the winners.

VI. Debriefing.

A. The following questions may be appropriate:
   1. What interest groups were at work in the game?
   2. What most influenced the way you voted?
   3. Why is it sometimes necessary to modify your goals?
   4. What are the characteristics of each interest group involved?
   5. Which project was most important to each group and why?
   6. Other questions felt to be appropriate by the teacher.

B. Test according to the behavioral objectives.

VII. Results of Tryout.

CAMP-A-RAMA

I. Overview.

A teaching game designed for the elementary grades, Camp-A-Rama will help the student make decisions to overcome the unforseeable situations that may arise during a camping adventure. Pupils may also learn the advantage of sharing. This game may be played by two to six players, or groups of players, from grades 3 to 6.

II. Objectives.

A. Behavioral.

1. The student will be able to distinguish various types of camping equipment used on a camping trip.
2. The student will be able to select proper equipment to be able to survive the unforseeable situations that arise during a camping trip.
3. The child should be able to choose a path that will enable him to reach his goal with least difficulty.
4. The child will be able to compare the effectiveness of cooperative versus individual strategy.

B. General.

1. The child should be more aware of the many unforseeable situations and hazards encountered during a camping trip.
2. The children should be able to make decisions more effectively.

III. Materials and Game Components.

A. Needed Materials.

1. Two sheets of white poster board (22" x 28").
2. Three felt-tip markers (red, blue, green).
3. Masking tape.
4. Elmer's Glue-All.
5. Optional -- various colored felt-tip markers to make camping scenes on board.
6. Six pace markers.
7. One set "Instant Insanity".
8. Magazine or catalogue pictures to put on equipment cards (Sears -- S & H Green Stamp).
9. Seven envelopes for each set of cards.

IV. Construction of Game Components:

1. Board.
   a. Tape together white poster board. Draw the designated paths as illustrated (see Appendix A).

b. Add a cave at each intersection.

c. Color the blocks red, blue, or green on each path as indicated. Leave blank spaces white.

2. Equipment Cards.

a. Cut 54 index cards in half.

b. Label each card to correspond with the following list. Cut pictures from magazines or catalogues to correspond with the label.

1. Tent.
2. Radio.
3. Matches.
4. Flashlight.
5. Baseball.
6. Rope.
7. Can Opener.
8. Sleeping Bag.
9. First-aid Kit.
10. Canteen full of water.
11. Hatchet.
12. Mess Kit.
13. Compass.
14. Knife.
15. Food.
16. Food.
17. Food.
18. Food.

c. Make six sets of these cards.

3. Hazard Cards.

On individual index cards put the following:

Thunderstorm Group

1) Keep going 5 spaces and use all matches to light fire

or

2) Go back to nearest cave

or

3) Go home.

Equipment Individual

You dropped one item in the creek.

Flashlight Individual

1) Use flashlight to go through dark tunnel and move 6 spaces and batteries are used

or

2) Move slowly 3 spaces and creep through the dark tunnel.

First Aid Kit Individual

You scratch your ankle on a twig

1) Use first aid kit to move 2 spaces

or

2) Stay where you are

or

3) If you have a partner he helps you advance 1 space

or

4) If you have 1st aid kit and partner, you advance 3 spaces.

Time to eat Group

1) With a food card you will have enough energy to move 6 spaces

or

2) Relax.

Knife Individual

1) Go home and get your knife which you may need later to cut through the briars

or

2) Stay where you are

or

3) If you have a knife you may move 2 spaces.

Individual

You feel like running.

Run ahead 4 spaces.

Compass Individual

You are lost in thick bushes.

1) Wait for 1 turn as you climb a tree

or

2) Use your compass and move 2 spaces.

First Aid Kit Individual

1) You just got stung by a bee - With first aid kit you can move to next color

or

2) Lose one turn.

Hatchet Individual

1) Chop tree limbs and climb over to next color block

or

2) Miss 1 turn while going around fallen tree.

Rope Individual

1) Use rope to help you over the swamp and leave it behind

or

2) Go around the swamp and miss next turn.

Equipment Individual

1) Climb mountain. Leave behind 2 pieces of equipment and move 2 spaces

or

2) Skip 2 turns while you go around the mountain.

Food Individual

1) You found some wild strawberries along the path. You may take 1 extra food card

or

2) You can run ahead 5 spaces

Individual

A Bear ahead --

1) Go back to nearest crosspath and change direction

or

2) Miss two turns and wait for bear to move.

Time to eat Group

1) Turn in food card to move 6 spaces

or

2) Stay where you are.

Group

Blanket of fog --

1) Use compass to move to next color

or

2) With no compass wait 2 turns till fog lifts.

Nightfall Group

Pitch tent or go back to nearest cave or go back home.

Knife Individual

1) Use knife to cut through briars

or

2) Miss next turn to go around briar patch.

Mess Kit Individual

1) Go home and get your mess kit which you may need later to cook a meal

or

2) Stay where you are

or

3) If you have a mess kit move 2 spaces.

Food Individual

1) Stop for a meal. Use 1 food card

or

2) Search for food and miss one turn.

Food Individual

1) Stop for a meal. Use one food card

or

2) Search for food and miss one turn.

Food Individual

1) Stop for a meal. Use one food card

or

2) Miss next turn while searching for food.

Canteen Individual

If your canteen is empty you may fill it at the spring.

Canteen Individual

The sun is hot.

1) Drink a little water and rest

or

2) Drink all the water in canteen and go 6 spaces

or

3) Go back to the nearest blue block to a spring.

4. Campsite Events.
    a. Cut index cards in half. Print the following on each card:
        1. Weiner Roast

           Double Value

              Knife

              Matches

              First Aid Kit
        2. Tug of War

           Double Value

              Rope

              Canteen
        3. Overnight Trip

           Triple Value

              Tent

              Sleeping Bag
        4. Overnight Trip

           Double Value

              Sleeping Bag

              Mess Kit

V. Procedure.

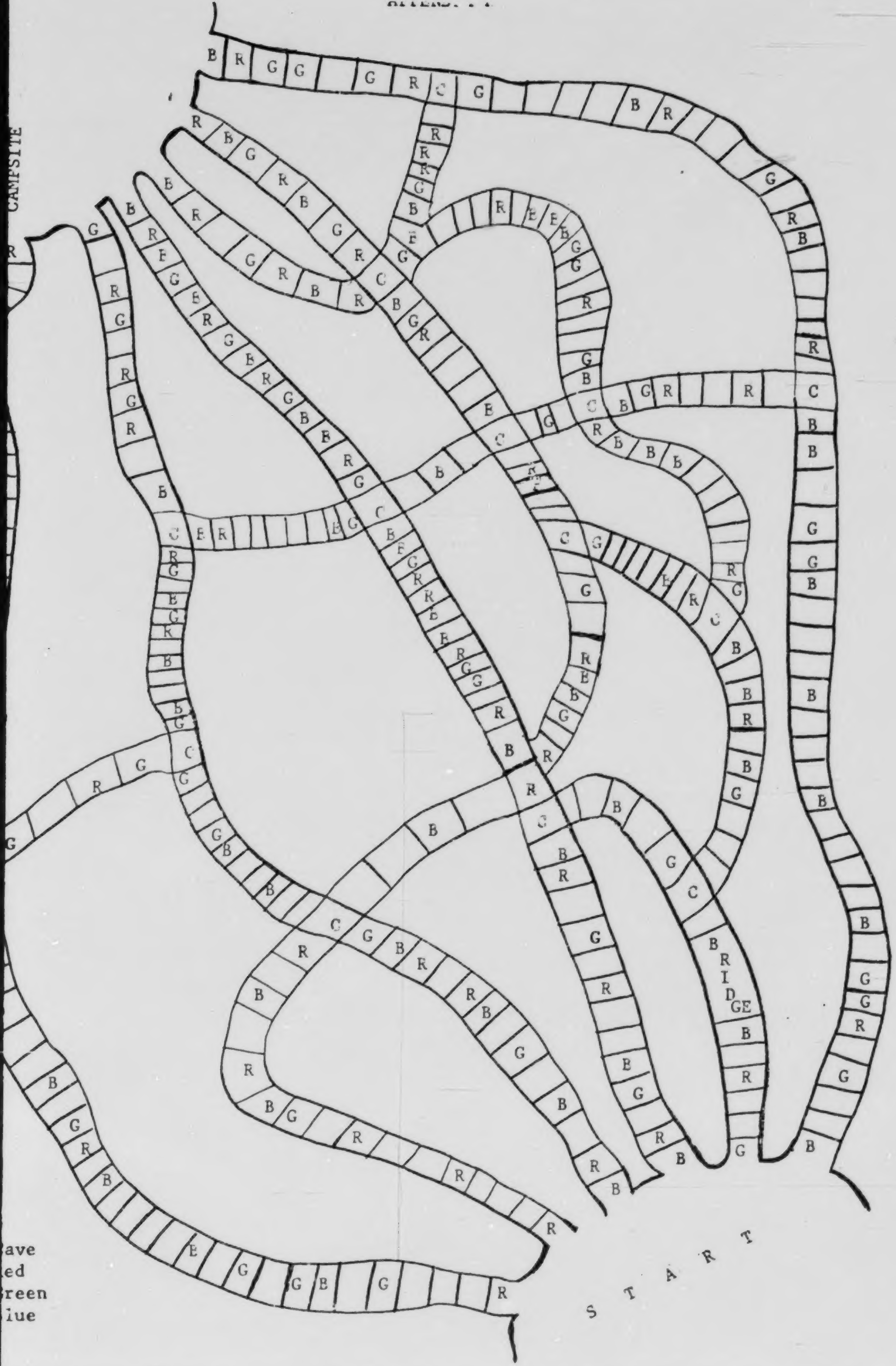
1. Any number of children may participate in the game. If there are more than six players, group playing is recommended.
2. Each player receives a packet of cards. He selects any 6 cards and returns other cards to packet and puts aside. Selected cards are laid face up in front of player.
3. Player decides path he will follow.
    a. He may choose same path as another player if he so desires.
    b. As player progresses, he may follow alternative paths.
4. He rolls cube and moves to color designated by cube. If the white cube face is on the top, he must take a hazard card. Hazards will be read aloud and are for either all players or individual player, as designated on the card.
5. When 2 players are within 10 spaces of each other they may join forces.
    a. They must then stay within 10 spaces of each other at all times.
    b. They may share all equipment except sleeping bag and food.
    c. The player in the lead must wait at entrance of camp for his teammate.
    d. Either player may decide to go alone at any time and end the partnership, except when he is at the entrance to the campsite.

VI. Win Criteria.

The first person to arrive at campsite receives 6 points. Second receives 5 points; third, 4 points; etc.

After all players have arrived at campsite, a card is then selected from the campsite events (by the first to arrive at the camp) to determine point value of each remaining piece of equipment. The equipment not mentioned in the "campsite event" will receive 1 point.

The child with the largest total is the winner.


CAMPSITE
BRIDGE
START
ave
ed
reen
lue

CLIMB-O

I. Overview.

This board game enhances the teaching of short and long vowel sounds and increases vocabulary. It is designed for children of all abilities in grades 1-3. Groups of four children can play.

The same format can be used to teach blends, digraphs, and other phonic elements, or to teach number facts and review arithmetical computations.

II. Objectives.

A. Behavioral.

1. Given a list of 20 words: cake, with, clock, apple, pet, fruit, eat, ice, coat, umbrella, uncle, bag, pig, be, use, five, desk, cave, wrote, drop, by means of oral dictation, the child should be able to distinguish correctly long and short vowel sounds within 16 of the words. The child's answers are to be given orally; he must name the vowel contained in the word and state whether it is long or short.
2. Given a printed list of 20 words from the game (see Section IV, B, 1, A, [1]), the child should be able to read them orally with 80% accuracy. Each word must be read within 5 seconds.

B. General.

1. Through hearing new words, the child should be able to increase his oral vocabulary.
2. Through reading new words, the child should be able to improve his sight vocabulary.

III. Materials and Game Components.

A. Needed materials (for one group of four children):

1. 1 sheet of white 24" x 28" poster board.
2. 3 sheets of blue construction paper.
3. 3 felt-tip markers: black, red, blue.
4. Ruler.
5. Scissors.
6. 4 place holders (buttons, counters, kernals of corn, or plastic disks can be used).

B. Game Components.

1. Playing cards.

Cut construction paper into 47 1½" x 3" rectangles.

a. Word cards:

(1) Print the following words on 40 playing cards (1 word/card):

tide
time
hen
tip
map
got
ate
meet
use
hut
hope
line
cop
hop
pet
rip
cut
late
sat
hide
cat
side
mat
let
but
ride
hot
meat
bat
stop
step
cot
hate
fat
pat
hat
met
go
top
fine

(2) On the reverse side of each card, print the appropriate vowel and mark it long or short, i.e., $\bar{a}$, $\breve{a}$.

b. Chance cards

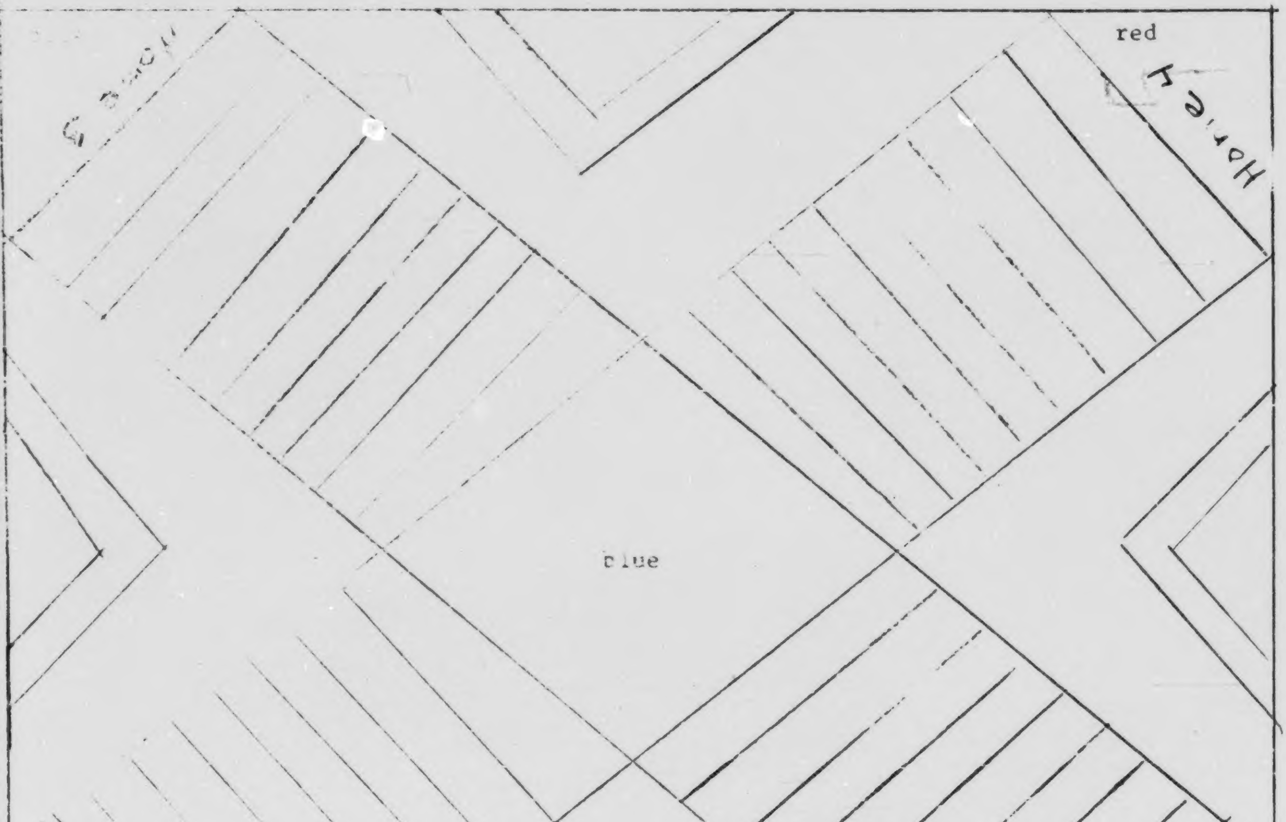
(1) On 7 1½" x 3" cards print the following (1 phrase/card):

Go back one space.
Go home.
Go ahead 1 space
Stay where you are.
Go back 2 spaces.
Go ahead 4 spaces.
Go ahead 3 spaces.

(2) These are shuffled with the word cards to make one deck of 4 cards. (Vowel side of the word cards goes face down.)

2. 4 place holders (1/child)

3. Game Board
Construct the following diagram on a 22" x 22" square of white poster board.



IV. Procedures.

A. Place the shuffled deck in the center of the board, word side up on the word cards.

B. Each of the four players puts his place holder on his home space.

C. Player 1, lower right hand corner, draws the top card from the deck. He must read the word aloud and name the vowel and vowel sound that it contains. By turning the card over, he can check his answers. If correct, he moves his place holder one space; if incorrect, he remains where he is. Each child keeps the cards he draws.

D.. If the player draws a chance card, he does exactly what the card tells him to do.

E. The game progresses in a clockwise direction around the board until there is a winner. If the deck is used before a player wins, the cards are reshuffled and play continues as before.

V. Win Criteria.

The first player to advance his place holder up his ladder into the center spot is the winner.

VI. Debriefing

A. The following questions may be appropriate:

1. Can you name a word from the game which contains a long a? short a?
   long e? short e?
   long i? short i?
   long o? short o?
   long u? short u?
2. What is the same about all long vowels? (They all say their name.)
3. What can you do if you do not know if a vowel is long or short? (Read the word using the long vowel sound; read it again using the short vowel sound. Which one sounds like a word you know?)
4. Flash the word cards before the students. Allow each child five seconds to read the word flashed before him.

B. Test according to behavioral objectives.

CONSERV-O

I. Overview.

This is a board game which teaches conservation problems and practices in the United States. It shows the departments responsible for the execution of proper practices for these problems. It is a game that can involve the entire class of 4th, 5th, or 6th graders in groups of 3 to 5.

II. Objectives.

A. Behavioral.

1. Child will identify areas of the United States where conditions are are most likely to occur.
2. Child will describe "freak" conditions of nature which occur in various parts of the country.
3. Identify government departments concerned with conservation practices.
4. On a written test the child will successfully list ten conservation problems and their appropriate solutions.

B. General.

Each child should be able to identify good and bad practices of conservation.

II. Materials for one group.

A. Needed materials.

1. 22" x 28" posterboard of a light color.
2. Die.
3. 8 index cards, 3" x 5".
4. 42 2½" x 3" cards.
5. Four rubber bands.
6. One black magic marker and four assorted colors of magic markers.

B. Construction of Game Components.

1. Board.
    a. Make outline of U. S. (see Appendix A) on posterboard.
        (1) Divide U. S. into 8 geographical regions: Northeast -- Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York. New Jersey, Pennsylvania.

        North Central -- Ohio, Indiana, Michigan, Illinois, Wisconsin, Minnesota, Iowa, Missouri.

        Plains -- North Dakota, South Dakota, Nebraska, Kansas.

        Mountain -- Montana, Idaho, Wyoming, Utah, Colorado.

        Pacific -- Washington, Oregon, Nevada, California, Alaska, Hawaii.

Southwest -- Arizona, New Mexico, Texas, Oklahoma.

Southeast -- Arkansas, Louisiana, Alabama, Mississippi, Georgia, Florida, South Carolina.

South Atlantic -- Tennessee, Kentucky, North Carolina, West Virginia, Virginia, Maryland, Delaware.

(2) With circles, triangles, etc., mark six moves per area.

b. Color coding of map.

Four colors were used: (colors choice optional)

red -- South Atlantic and Mountain regions

purple -- Northeast and Pacific regions.

orange -- North Central and Southwest regions.

blue -- Plains and Southeast regions.

c. These colors were used to outline each region and to make the track. The corresponding conservation problem cards were also coded.

2. Conservation problem cards.

Make one problem card for each area. Place the name of the region at the top, and list the problems below on each index card, 3" x 5".

a. Mountain States.

(1) Break in dam floods valley.

(2) Soil eroded from unplanted hillsides.

(3) Department visit.

(4) Wild game reserve found on your 400 acre spread.

(5) Wild card.

(6) Ranger checks recreation area often.

b. Pacific States.

(1) Wild card.

(2) Offshore oil well leaking.

(3) Your '49 Ford has no anti-fumes device.

(4) Department visit.

(5) Mudslides cleared away by this department.

(6) Earthquakes -- heavy damage.

c. South Atlantic States.

(1) Department visit.

(2) Screening of junk yards beautifies your drive.

(3) Legislation bans billboards on interstate highways.

(4) No run-off channels to stop topsoil washout.

(5) No funds allocated for cover of open pit mines.

(6) Wild card.

d. Northeastern States.

   (1) Ugly, unsightly strip mine not refilled.
   (2) Awarded safe drilling certificate.
   (3) Wild card.
   (4) Strip farming done on your farm.
   (5) Water polluted by mine run-off.
   (6) Department visit.

e. Southeastern States.

   (1) Cut off timber causes flooding rivers to wipe out crops.
   (2) Wild card.
   (3) Public recreation area destroyed by hailstorm.
   (4) Ionization working on chemical plant controls air pollution.
   (5) Department visit.
   (6) Run-off channel stops.

f. North Central States.

   (1) Wild card.
   (2) Open Pit mine reforested.
   (3) Industrial waste not allowed to be dumped.
   (4) Tornado hits -- no warning -- severe weather conditions.
   (5) Park table destroyed by vandalism.
   (6) Department visit.

g. Plains States.

   (1) Junk yards distract from scenery.
   (2) Department visit.
   (3) Windbreak stops wind erosion.
   (4) Wild card.
   (5) No warning -- severe weather conditions; 100 lose lives.
   (6) No reforestation -- abusive timber practices.

h. Southwestern Western.

   (1) Department visit.
   (2) Billboards are everywhere; mar the scenery.
   (3) No law enforcement for littering.
   (4) Smokey the Bear prevented forest fire.
   (5) Sewage waste disposal plant built by DuFont.
   (6) Wild card.

3. Department cards.

On each of 6 cards, list the functions of one department, as follows.

a. Department of Mines and Minerals.
    (1) Abusive strip mine practices.
    (2) Off-shore oil slick.
    (3) Safe drilling practices.
    (4) Open pit mine abuses.

b. Bureau of Vacation and Travel.
    (1) Littering -- $100.
    (2) Billboards --
    (3) Help protect public recreation areas.
    (4) Vandalism -- ech!
    (5) Junk yards -- uglify America.

c. Department of Health.
    (1) Fumes -- air pollution.
    (2) Water-polluted mines.
    (3) Water-pollution solved by waste disposal of sewage.
    (4) Air-pollution solved by ionization of dust particles.
    (5) Water-pollution from industrial waste.

d. Office ot Civil and Defense Mobilization.
    (1) Poor weather conditions.
    (2) Earthquakes.
    (3) Cracked dam -- flood.
    (4) Rain and mudslides.

e. Department of Forests and Waters.
    (1) Lacking trees -- flooding rivers.
    (2) Forest fire prevented.
    (3) Abusive timber practices.

f. Department of Agriculture.
    (1) Topsoil washout in flooding.
    (2) Wind erosion.
    (3) Wild Game Preserve.
    (4) Strip farming -- good land usage.
    (5) Lack of planted fields -- soil erosion.

4. Department Visit Cards.

   a. The Department Visit Cards are made from the 26 practices stated on the Department Cards. Each 2½" x 3" card should contain one of these practices with no parts underlined.

   b. Also four (4) additional DVC cards should be made containing the following statement:

      You practice good conservation -- move on number of spaces shown on the die.

5. Wild Cards.

   On each 2½" x 3" card, list one of the following statements.

   a. Waves good for surfing -- get your surf board -- stay one turn.
   b. Tour mines for careful inspection. Stay where you are.
   c. Heavy rainstorm causes road washout. Go back two spaces.
   d. Spend time convincing local citizens that billboards are unattractive. Go on 2 spaces.
   e. Overcrowded vacation area -- no funds available from department. Move on three (3) additional spaces.
   f. No bathing on oil slick beach for you -- go ahead 4 spaces.
   g. Ranger invites you to help plant trees. Stay where you are.
   h. Health department finds pollution free water here. Advance 2 spaces.
   i. Radio warns of dam bursting. Flee area. Move 5 spaces ahead.
   j. Miss 1 turn to give directions to a lost traveler.
   k. Bridge flooded out -- you warn children on a school bus -- go on 4 spaces.
   l. Stop to buy, write and send postcards. Stay where you are.
   m. Flood warning. Take another turn to flee area.
   n. Smokey saw you breaking branches from a sapling. Go back 3 spaces.
   o. Wild card covers any errors (emergency card).
   p. You "litterbug" -- miss 1 turn.
   q. Smokey the Bear saw you "douse" that burning match properly. Move on. Take another throw.
   r. Rivers frozen -- wait one turn for dog sled.
   s. Wild card -- covers anything, hold for emergency.
   t. Heavy smog -- all travel grounded until it lifts. Stay where you are.
   u. Windstorm blows dirt in your eyes. Bonus of 3 spaces to see your eye doctor.
   v. Carving initials on park trees outlawed by Smokey, go back 4 spaces.
   w. Good conservation department practices, go on free ride to the next area of the U. S.
   x. Picture taking, stay on in the exact spot.

y. Road out -- Mudslides, go back 5 spaces because of detour.

z. Rainstorm, take cover, stay where you are.

a^1. Earthquake not cleared away by office. Miss one turn to give help to local people.

b^1. Wild card -- good for any emergency.

c^1. Stop to have anti-smog device repaired on your 1969 car, stay on the same spot.

IV. Procedure and rules.

A. Four or five players are needed for the game. They shake the die from the highest to the lowest, to find the starting position on the board.

B. Each player must start in a different section of the United States from the other players.

C. The game begins by each player's shaking the die in turn. The number on the die indicates the related number on the conservation problem cards. The player must then identify the department which solves the conservation problem. He then turns the selected department card over to the back to verify his choice. (The key word in the conservation problem card must correspond with the key word on the back of the department card). If the player is correct in his department selection he proceeds the number of spaces on the die. If the player is incorrect he does not move. On the track a player is to proceed from Florida to Maine.

D. Department visit.

1. When the number on the conservation problem card indicates a department visit the player must choose one of the six departments he would like to assist.
2. He then takes the top card from the department visit card pile.
3. After reading the card the child must decide whether or not the practice stated on the card is within the jurisdiction of the department chosen by the player.
4. If upon checking with the Department Cards the player's response was was correct, he may move the number of spaces shown on the die. If his response was incorrect, he does not move at all.

E. Wild Card.

1. When the number on the conservation problem card indicates WILD CARD the player chooses the top card from the WILD CARD pile and follows the directions given on the card.
2. The WILD CARD is then returned to the bottom of that pile unless it is an emergency. Emergency may be held until needed.

V. Win Criteria.

The first person to reach the point at which they began the game via the planned route on the board.

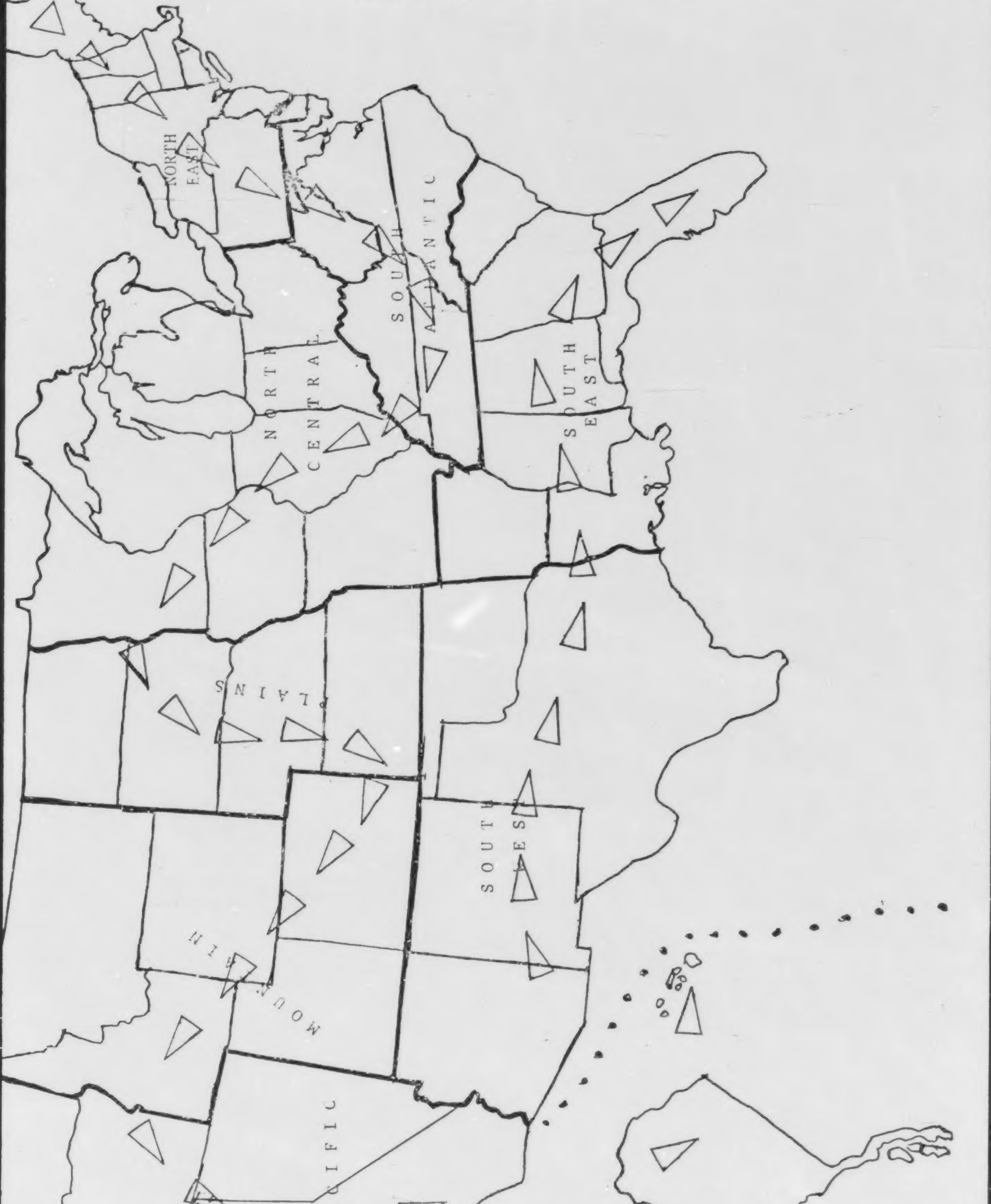
VI. Debriefing.

A. The following questions may be appropriate:

1. Why did a certain player win?
2. What could help you win next time?
3. Which departments are the most difficult to recognize?
4. Which practices are similar or nearly alike?
5. Which practices are more useful in some areas than in another?
6. How does this game make you aware of the part that our government plays in conservation practices?

B. Test according to the behavioral objectives.

APPENDIX A


NORTH EAST
SOUTH ATLANTIC
NORTH CENTRAL
SOUTH EAST
PLAINS
SOUTH WEST
MOUNTAIN
PACIFIC

DILIST

Overview.

This board game is designed to improve the skills of giving clear and accurate directions and of listening carefully in order to follow directions correctly. (If the difficulty level of the game components is altered), it can be used in grades K-12 in any subject area. A whole class can play.

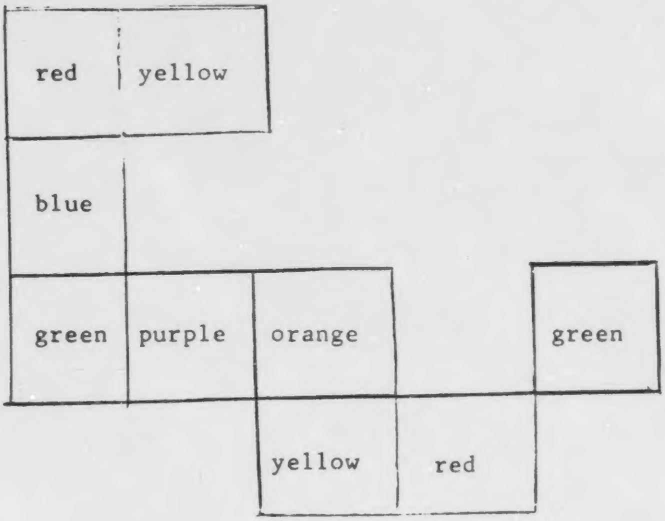
DILIST can also be used to teach colors and numbers on a kindergarten-first grade level.

Objectives.

A. Behavioral.
   (The following objectives are for a sixth grade level. They must be altered for other levels.)
   1. Given a list of 10 oral directions of the following type:

      From this box of pencils, select two red, three blue, and four green pencils;

      the child should be able to perform the tasks with 90% accuracy. After each direction is given, time is allotted for performance. The directions may not be repeated once they have been given.
   2. Given a geometric pattern of the following type:



the child should be able to communicate the directions for forming it clearly enough so that nine out of 10 average students will be able to establish the given pattern correctly with a box of crayons and a piece of paper, without seeing the pattern or looking at each others' papers.

Materials and Game Components.

A. Needed Materials.
   1. Sheets of light-colored construction paper (one/player).
   2. 2 sheets each of orange, purple, red, yellow, blue, and green construction paper.
   3. 1 pack of 3" X 5" index cards.
   4. Envelopes (one/player).

B. Construction of Game Components.
   1. Game boards:
      Cut sheets of light-colored construction paper into 5" X 5" squares. Line each of these squares into 25 1" squares.
   2. Individual student packets:
      Cut the orange, purple, red, yellow, blue, and green construction paper into 1" squares. Place four squares of each color into each envelope.
   3. Game cards:
      On each 3" X 5" index card, draw a different pattern involving small squares of the six different colors.

      These pattern cards are divided into three levels of difficulty. The cards containing patterns of a low level are assigned the value of five points; average level, the value of 10 points; and the most difficult level, the value of 15 points. (Each card contains only one pattern.)
      a. Examples of 5 point cards:

red	green		yellow	orange
reen	red		orange	yellow

		blue		
		yellow		
green	red		red	green
		yellow		
		blue		

b. Examples of 10 point cards:

d				orange
	purple		blue	
		green		
	blue		purple	
d				orange

	red		purple	
	yellow		orange	
	purple	red	blue	
	blue		green	
	red		purple	

c. Examples of 15 point cards:

d				green
	yellow		yellow	
lue		purple		blue
	yellow		yellow	
en				red

		blue		
	green		orange	
red				red
	orange		green	
		blue		

V. Procedures.

A. The class is divided into two teams, and each player receives a game board and packet.

B. Team I, player 1 (and subsequent "communicators" of directions from each team) can be chosen by asking who has a birthday in January (February, etc?).

C. Team I, player 1 comes to the front of the room and chooses one pattern card from any of the three piles, according to the score he wants his team to receive.

D. This player must give oral directions to his team, so that they can construct the pattern he has chosen without seeing it. One direction is given at a time and then followed; the communicator is allowed to repeat his directions.

E. Each player on the communicator's team uses his own board and colored squares to construct the pattern. Players may not look at other players' boards.
F. The team which is not playing for a score can practice while the communicator's team is playing for a score.
G. When the communicator has completed the directions, he shows the pattern to the class and checks to see how many have formed it correctly. The points are then totaled and recorded (according to the win criteria explained below).
H. This procedure is repeated for Team 2, etc.
I. Each team takes as many turns as time allows. (The time limit can be determined by the teacher.)
J. The winner is determined.

Win Criteria.

A. Each team player who has the pattern correctly established receives the point value of the pattern card to be applied to his team's score.
B. A bonus of one point per correct team member is given to the communicator to apply to his team's score.
C. The team points are totaled and recorded after each set of directions.
D. The team with the highest score at the end of the game is the winner.

Debriefing.

A. The following questions may be appropriate:
    1. Ask the winning team "Why do you think you won?" (Perhaps they listened more carefully, etc.)
    2. Ask the communicators on this team: "What did you do to make the directions easy to follow?"
    3. Ask the losing teams: "Why do you think you did not win?"
    4. Ask the losing teams: "What could you do next time to improve your score?"
    5. "How do you listen carefully?"
B. Test according to the behavioral objectives.

Results of Tryout.

DISCOVEX

I. Overview

This board game is to be used in conjunction with a social studies unit on "The Age of Exploration and Discovery." Students will review explorers and their voyages. Designed for students grades 9-12, it can be adapted for all lower levels. Groups of four students can play.

Different explorers, explorers and countries they sailed from, or explorers and dates of voyages could be substituted on the game boards and cards. A similar game board could be used to teach associated facts in mathematics, geography, history, science and English.

II. Objectives

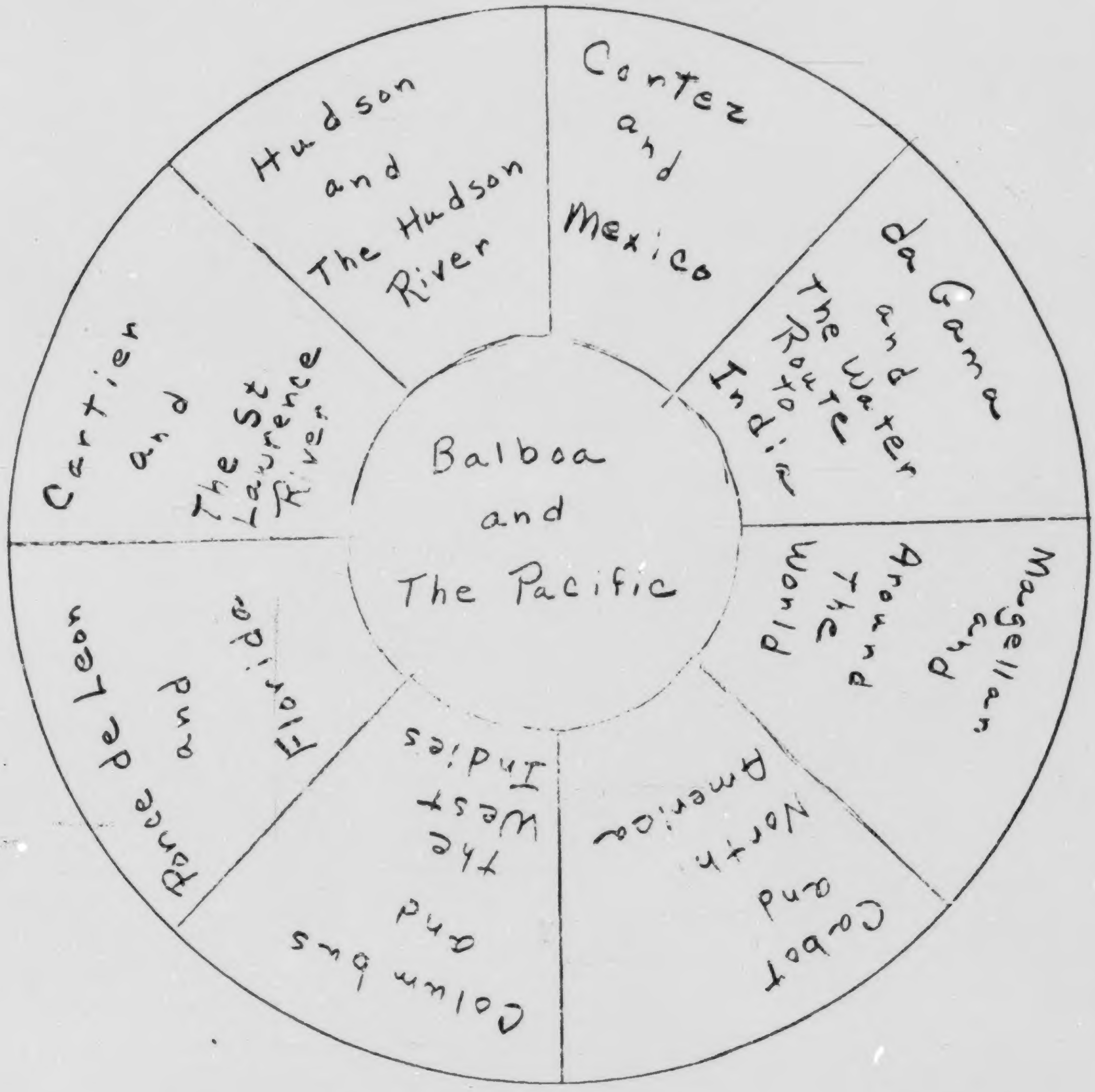
A. Behavioral.
  1. Provided with a list of the explorers given in section B. 1, 6, the student should be able to write correctly after each name the principal discovery made by that explorer.
  2. Provided with a list of the principal discoveries given in section B, 2, a, the student should be able to write correctly after each discovery the name of the explorer who made it.

B. General.
  1. Students should become familiar with places in the New World and the explorers who discovered them.
  2. Students will become familiar with the spelling of explorers' names and geographic locations.

III. Materials and Game Components.

A. Needed Materials.
  1. 36 "chips" or markers for each player (kernels of corn or plastic disks could be used).
  2. 18 3" X 5" index cards per game board.
  3. 1 piece of 22" X 28" poster board per game board(construct one game board for each team of four students).

B. Construction of Game Components.
  1. Game boards.
    a. Inscribe a circle, 12" in diameter, on each piece of 22" X 28" poster board (the circle can be made larger if the teacher desires)
    b. Inscribe a smaller circle in the center of the larger circle and divide the remaining portion of the larger circle into eighths. Lable the sections of the game board as shown in this diagram:


Hudson and The Hudson River
Cortez and Mexico
da Gama and Water The Route to India
Magellan and Around The World
Cabot and North America
Columbus and The West Indies
Ponce de Leon and Florida
Cartier and The St Lawrence River
Balboa and The Pacific

2. Game cards:
   a. One deck of 18 cards is needed for each team of four students, each card should be labeled with one of the following names or discoveries:

      Hudson
      Hudson River
      Cortez
      Mexico
      Cabot
      North America
      Columbus
      The West Indies
      Ponce de Leon
      Florida
      da Gama
      Water Route to India
      Magellan
      Around the World
      Cartier
      St. Lawrence River
      Balboa
      Pacific Ocean

IV. Procedures.

A. Divide the class into teams of four students. Give each team a game board and a deck of 18 playing cards; give each player 36 chips or markers.

B. Appoint a dealer in each group to shuffle and deal all the cards. (Two players will receive five cards each, the others four; this will not matter as the game is played in rounds of four and as the deal passes from player to player.) These cards should be kept face down and placed in a vertical line.

C. Each player places one chip in each of the nine sections of the game board.

D. The player to the dealer's left turns his top card face up; other players follow in order doing the same thing. This process is repeated as players look for two cards in their own group of cards which contain the same name and the same discovery as one section of the game board, for example, Ponce de Leon and Florida.

E. When a player has two cards within his group of cards which "match," he removes the chips from the section of the game board which names the match.

F. When all players' cards are face up, another round begins. Chips which remain on the board after the first round should be left in place, and each player again places a chip on each section of the board as the new round begins.

G. The deal passes to the left, and a total of four rounds is played.

V. Win Criteria.

The player in each group who has the most chips in his possession at the end of four rounds is the winner.

VI. Debriefing.

A. The following questions may be appropriate:
   1. What explorers can you name from the game?
   2. What did each discover?

B. Test according to the behavioral objectives.

VII. Results of Tryout.

DONKEY RACE

I. Overview

This board game provides drill in rapid recognition of the Dolch Basic Sight Words in a most unique way — the child tosses a bean bag on a donkey which contains the words. The game would be of most interest to children in the primary grades and in remedial reading classes. It can be used with either two to four players or with the whole class by employing teams.

If adapted, DONKEY RACE can be played using definitions, spelling, color recognition, drill in arithmetic and blends, plus any other subject which requires review.

II. Objectives.

A. Behavioral.

Given a list of 30 Dolch Basic Sight Words which were used in the game, the child should be able to identify 25 of the words in an oral test. He will be given a maximum of three seconds to identify each word.

III. Materials and Game Components.

A. Materials.

1. 3' X 5' piece of oilcloth.
2. 1 black or brown grease pencil.
3. Approximately 6 22" X 18" sheets of white oaktag.
4. Scissors.
5. 4 felt-tip pens: black, yellow, red, and green.
6. 1 bag of dry corn or beans.
7. ½ yard of strong fabric.
8. 1 sheet of brown construction paper.
9. 4 small blocks of wood (approximately 1" cubes).
10. Opaque projector.

B. Game Components:

1. Donkey board.
   Using an opaque projector, enlarge the following drawing and draw it on the sheet of oilcloth with a grease pen.
2. Bean bag.
   Using fabric and beans (or corn) construct a 4" X 4" square bean bag.
3. "Donkey words".
   a. Cut irregularly shaped pieces out of oaktag, each large enough to contain a word. (Number of pieces depends on the desired number of words to be used. The words are from the Dolch Basic Vocabulary List.)

___a
___about
___after
___again
___all
___always
___am
___an
___and
___any
___are
___around
___as
___ask
___at
___ate
___away

___be
___because
___been
___before
___best
___better
___big
___black
___blue
___both
___bring
___brown
___but
___buy
___by

___call
___came
___can
___carry
___clean
___cold
___come
___could
___cut

___did
___do
___does
___done
___don't
___draw
___drink

___eat
___eight
___every

___fall
___far
___fast
___find
___first
___five
___fly
___for
___found
___four
___from
___full
___funny

___gave
___get
___give
___go
___goes
___going
___good
___got
___green
___grow

___had
___has
___have
___he
___help
___her
___here
___him
___his
___hold
___hot
___how
___hurt

___I
___if
___in
___into
___is
___it
___its

___jump
___just

___keep
___kind
___know

___laugh
___let
___light
___like
___little
___live
___long
___look

___made
___make
___many
___may
___me
___much
___must
___my
___myself

___never
___new
___no
___not
___now

___of
___old
___on
___once
___one
___only
___open
___or
___our
___out
___over
___own

___pick
___play
___please
___pretty
___pull
___put

___ran
___read
___red
___ride
___right
___round
___run

___said
___saw
___say
___see
___seven
___shall
___she
___show
___sing
___sit
___six
___sleep
___small
___so
___some
___soon
___start
___stop

___take
___tell
___ten
___thank
___that
___the
___their
___them
___then
___there
___these
___they
___think
___this
___those
___three
___to
___today
___together
___too
___try
___two

___under
___up
___upon
___us
___use

___very

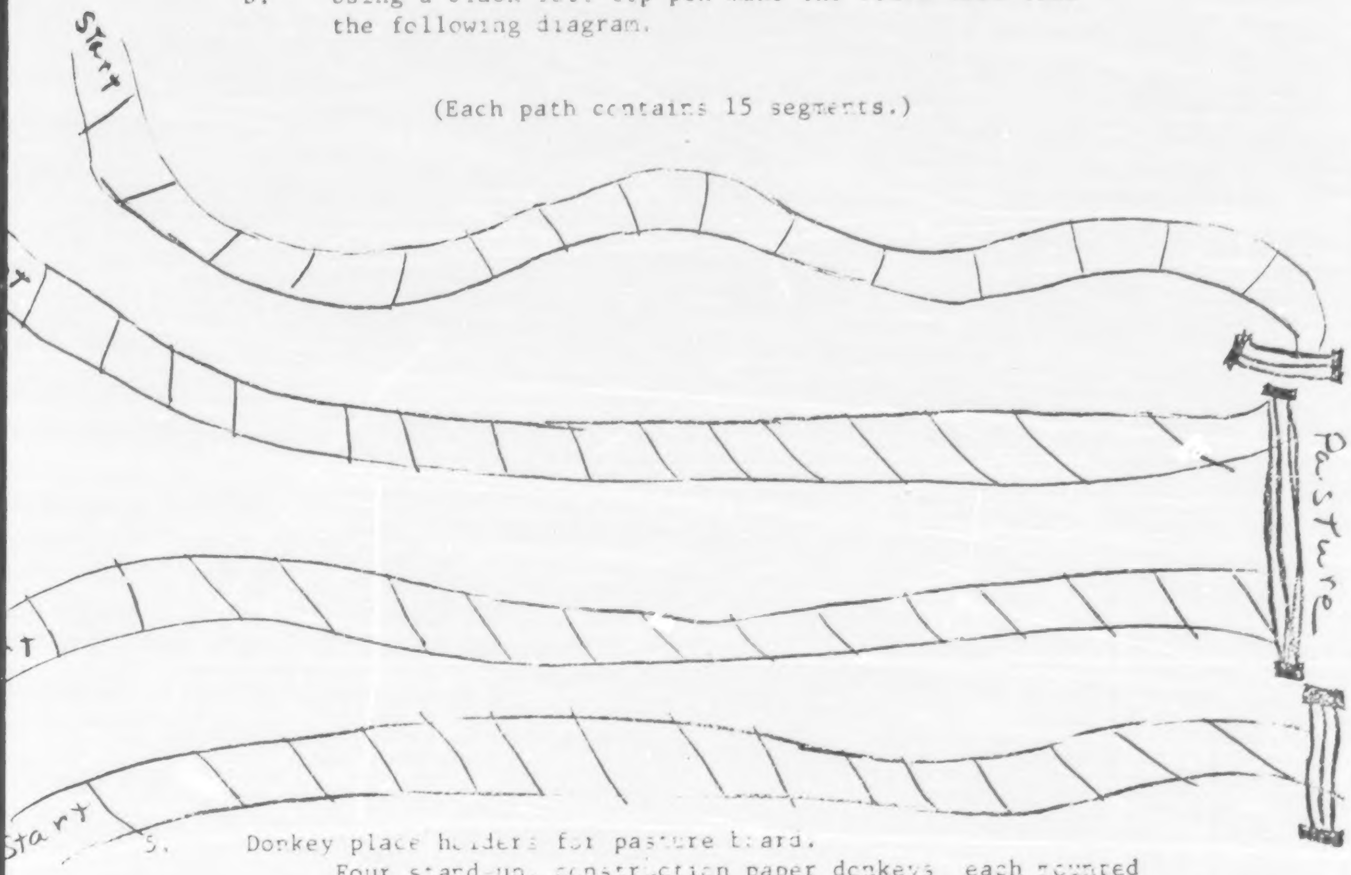
___walk
___want
___warm
___was
___wash
___we
___well
___went
___were
___what
___when
___where
___which
___white
___who
___why
___will
___wish
___with
___work
___would
___write

___yellow
___yes
___you
___your

b. On one side of the card print a word; on the other side print the numeral. (Assign the chosen words with a numerical value of from 1 to 5, according to the difficulty of the word.)

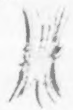
4. Pasture board:
   a. Tape together 2 22" X 18" sheets of oaktag.
   b. Using a black felt-tip pen make the board look like the following diagram.

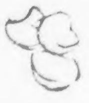
(Each path contains 15 segments.)



5. Donkey place holders for pasture board.
   Four stand-up, construction paper donkeys each mounted on a small block of wood, each block of wood should be a different color to designate various players.

   The following chance spaces are randomly inserted into each path:

1.  Picture of a bag of hay
   Lose 1 turn (donkey stops to eat)

2.  Rock slide
   Go back 2 spaces

3. Fence
   Lose 1 turn

4.

Rain storm.
Donkey frightened by thunder
Go back 1 space

5.

Stung by bee
Advance 1 space

6.

Smells clover field
Advance 2 spaces

IV. Procedures.

A. The word cards are placed face down, very closely together, on the body of the oilcloth donkey which is flat on the floor.
B. Each player chooses his donkey and places it at the desired starting position.
C. The player with Donkey #1 begins by throwing the bean bag on the oilcloth donkey, aiming for a word card. He must stand behind a throwing line established by the teacher. If he goes over the line the toss does not count and he must toss again. If this happens a second time he loses his turn.

The word card which contains the largest portion of the bean bag will be the card for the child to read.
D. If the player with Donkey #1 can correctly read his word card in three seconds he may keep his card and advance his donkey the given number of spaces. (If he cannot, the card is read by anyone who can read it. This person does not advance. The card is returned.)
E. If he lands on a chance space he reads it and immediately does what it tells him to do. If it tells him to miss a turn, obviously he does not do this until his next turn.
F. Continue using the same procedure.

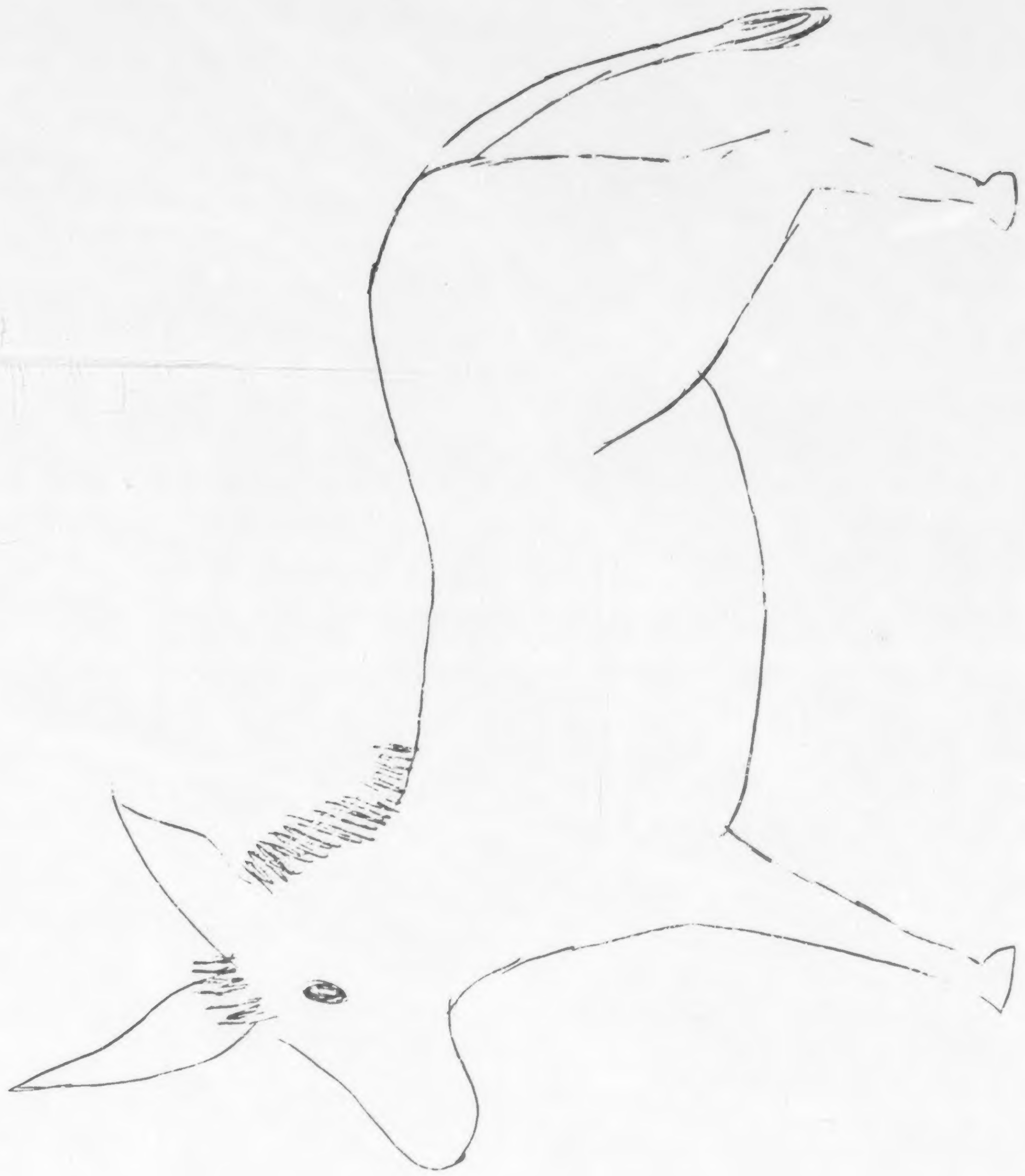
V. Win Criteria.

The first player to advance his donkey into the pasture is the winner.

VI. Debriefing.

A. The following questions may be appropriate:
  1. Which words were the most troublesome?
  2. Who can use three game words in sentences?
  3. Which words could be put together to make sentences?
  4. Which words are action words?
  5. Which words name things?
  6. Which words can we eliminate because all the players knew them?
  7. What words should we add?
  8. Which words look alike?
  9. How are these words different?
B. Test according to the behavioral objectives.

VII. Results of Tryout.



EL SUEÑO IDEAL DE DON QUIYOTE
(The Impossible Dream)

I. Overview.

This board game reviews the conjugations of Spanish verbs. Designed for use in Spanish I to III, the game involves the entire class. Don Quiyote's battle with windmills is symbolized in the game.

French adaptions are included: Lettres de Mon Moulin (Letters From My Mill).

II. Objectives.

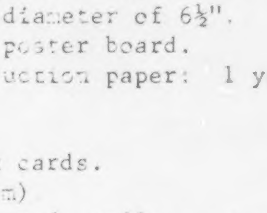
A. Behavioral.
   Orally given any Spanish verb in the infinitive form, and the person and number, the student should be able to give the correct form as an automatic response.

B. General.
   1. Through hearing, seeing, and saying the verbs, the student should gain a better knowledge of Spanish verbs and their forms.
   2. Every experience which causes the student to speak or think in Spanish should increase his fluency in speaking the Spanish language.

III. Materials and Game Components.

A. Needed Materials.
   1. One 5 lb. plastic cottage cheese container 7" high with a base diameter of 5" and a top diameter of 6½".
   2. 1 12" X 18" sheet of red poster board.
   3. Sheets of 9" X 12" construction paper: 1 yellow, 1 blue.
   4. 1 brass fastener.
   5. Glue.
   6. 34 3" X 5" unruled index cards.
   7. 8 plastic horses (one/team)
   8. Felt-tip markers: black, red, yellow, green, and blue.
   9. 8 sheets of white poster board (22" X 28").
   10. Yardstick.

B. Construction of Game Components.
   1. Windmill:
      a. Invert the cottage cheese container so that the base has the largest diameter.
      b. On one side of the container, paste a door and two windows made of construction paper (two-dimensional)..
      c. Using a brass fastener close to the top, fasten the following construction on the other side of the windmill:
      d. Using red poster board cut two of the following forms. Glue them together so that both sides are red.
      e. Using yellow construction paper, make the figures for both sides of the spokes as shown:



2. Chance cards:
   - Using 10 3" X 5" unruled index cards and a red felt-tip pen, make a card for each of the following: (Put only the Spanish on the cards.)

You won the fight. Advance two spaces.	¡Ganó la lucha! Adelante dos espacios.
Go back to visit your love, Dulcinea.	Vaya a visitar a su amor, Dulcinea.
The sheep are coming. You must stop and fight!	Los ovejas vienen. ¡Tiene que parar y luchar!
Rocinante is hungry. Go back home and feed him.	Rocinante tiene hambre. Regrese a casa y dele a comer.
Skip a space. Pick any person you wish.	Salte un espacio. Escoja la persona del verbo que quiera.
Skip three spaces. Take another turn. I'm sorry! Go back home!	Salte tres espacios. Tome otro torno. ¡Lo siento! Regrese a la casa.
You lost the fight! Go back two spaces.	¡Perdió la lucha! Regrese dos espacios.

3. Verb cards:
   Using 24 index cards and a black felt-tip pen, make a card for each of the following verbs:

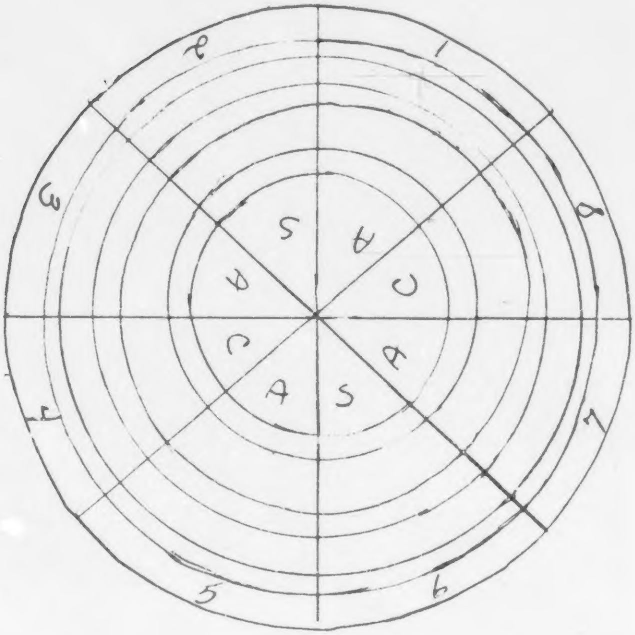
ser
estar
crier
morir
sentir
decidir
descubrir
recibir
escribir
vencer

ceder
entender
beber
comer
manejar
jugar
faltar
boilar
cantar
andar

solir
ir
venir
hacer

4. Place markers (small plastic horses).
5. Game Board:
   a. Tape together four sheets of white poster board. On the opposite side, draw a large circle 43" in diameter; using a yardstick, divide the circle into eight equal parts. Center the chalkboard compass, and, beginning at the perimeter of the circle, divide the circle into eight concentric circles with approximately two inches between each line (the center circle should be approximately 12" in diameter). Number the outer section nearest the perimeter 1 to 8. In the center circle, use a felt-tip marker to color in each of the eight triangular sections (yellow, red, and blue are very colorful and effective).
   b. Use stencils and assorted colors of construction paper to make two sets of the following letters: C, A, S, A. Paste these letters onto the eight colored triangular sections in the center of the circle.

(For expediency, you may prefer to print the preceding letters on the playing board.) See diagram.



IV. Procedures.

A. Divide the class into teams of two. (If the class has more than 20 students, the teacher must adjust the game.) Each team puts its horse in the appropriate starting place. One team member is designated as player 1 (who will do singular forms) and one as player 2 (who will do plural forms). Team 1, player 1 chooses the top verb card and reads it. He then spins the windmill to tell him which person - 1st, 2nd, or 3rd. If he should spin the spoke containing the exclamation mark, he goes to the chance pile and draws the top card. He must do what the chance card tells him to do.

B. If he has spun 1 to 3, he must state his verb in that person, singular form. His partner, player 2, must state the same verb in the same person. plural form. (Tense is determined by the teacher before the game.) [If both answers are correct, the team's horse advances two spaces. If only one is correct the horse advances only one space; neither correct. spaces.]

C. When an answer is given, the team to the right of the answering team becomes the checker. This checking team must state correct or incorrect, accordingly. If incorrect, they must try to give the correct answer. Any team may challenge the checker. Any challenger who challenges incorrectly loses a space. Anyone, challenger or checker, who answers correctly advances one space. The original team remains where they are if they are incorrect.

E. Proceed in same manner, clockwise around the board.

. Win Criteria.

The first team to advance its horse to the windmill is the winner.

I. Debriefing.

A. The following questions may be appropriate:
  1. Ask the winning team:
    a. Why do you think your team was able to get your horse to the windmill first?
    b. How many times did both you and your partner answer correctly?
    c. How many times were you corrected? On which words?
    d. Did you gain any spaces by correcting or challenging? On which words?
  2. Ask the losing teams:
    a. Which words did you miss?
    b. What would you do to win next time?
  3. General questions:
    a. Which verb types are the hardest? Easiest?
    b. Which verbs are regular? Irregular?

B. Test according to the behavioral objective.

II. Results of Tryout.

Appendix A

French

Verbs

avoir - to have
être - to be
aller - to go
faire - to make
mettre - to put
prendre - to take
dire - to say
acheter - to buy
chercher - to look for
goûter - to taste
choisir - to choose
finir - to finish
réussir - to succeed
attendre - to wait for
entendre - to hear
répondre - to answer

	Chance cards.
Resteq ici pour la bataille	- Stay here for the battle.
Votre cheval a faim. Arrêtez pour lui donner à manger.	- Your horse is hungry. Stop to feed him.
Tournez la roue et repondez au verbe.	- Spin the wheel and answer the verb.
Vous avez gagné une espace.	- You have gained one space.
Vous avez réussi. Allez directement au moulin!	- You've won. Go directly to the mill!
Prenez un verbe et choisissez la personne.	- Take a verb and choose the person.
Vous avez conquéri votre ennemi. Avancez deux espaces.	- You have conquered your enemy. Advance two spaces.
Avancez trois espaces.	- Advance three spaces.
Vous avez échoué. retournez à la maison.	- Uou've failed. Go back home.
Vous avez recu un coup. Retournez une espace.	- You've been wounded. Go back one space.
Vous avez perdu le chemin. Retournez trois espaces.	- You've lost the way. Go back 3 spaces.
Vous avez perdu la bataille. Retournez deux espaces.	- You've lost the battle. Go back two spaces.

THE ELEMENT FAMILY GAME

I. Overview.

This board game reviews the elements of the Periodic Chart, which are related through corresponding groups to Families, and through symbols or names to the members of the Families. It can be played by secondary chemistry or physics classes of any size.

The same format can be used on any grade level in any subject matter which requires categorizing.

II. Objectives.

A. Behavioral.

(Different segments of the Periodic Chart can be used to play the game; the behavioral objectives refer to those segments which are used.)

1. Given the numbers of chemical groups which appear on a Periodic Chart but unaided by the Chart, the student should be able to write at least 50% of the Family Names for the Group Numbers.
2. Given the symbols of the chemical elements used in this game and unaided by a Periodic Chart, the student should be able to write the corresponding chemical names of at least 50% of the symbols.
3. Given the symbols of the chemical elements and unaided by a Periodic Chart, the student should be able to write at least 50% of the corresponding Family Numbers.

B. General.

1. If the student learns the symbols and elements involved on the Periodic Chart, the student should be better able to understand chemistry and physics.
2. The student should become familiar with the elements on the Periodic Chart.

III. Materials and Game Components.

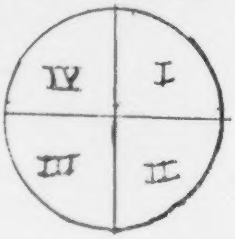
A. Needed Materials.

1. 1 sheet of white poster board (28" X 22").
2. 1 felt-tip marker.
3. 1 pack of 3" X 5" note cards.
4. 1 sheet of heavy construction paper.
5. 1 brass fastener.

B. Construction of Game Components.

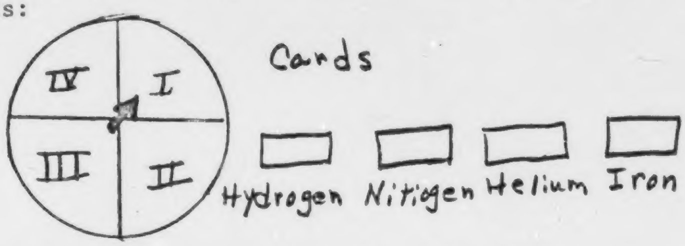
1. Game board.

A circle is inscribed on the poster board and divided into sections corresponding to the Group Numbers that the instructor has decided he will use in the game:



A spinner is formed from the construction paper and fastened to the center of this game board.

2. Game cards:
The Family Names of the elements to be used in the game are written on note cards and placed in front of piles of note cards that contain symbols or proper names of corresponding elements. The cards are constructed at the teacher's discretion, but they should be mixed, part labeled with symbols and part with names of elements:



IV. Procedures.

A. Divide the class into groups and give each group a game board; then divide these groups into teams. Appoint a student scorekeeper for each group.

B. A student from Team No. 1 spins the arm on the game board; the arm will point to a Group Number. The student then mentally decides to select a card from one of the piles (determined by the Group Number to which the arm points). After selecting the card, he completes his turn by stating the correct symbol or name for that card. (If the card contains a symbol, the student must state the correct name of the element; if the card contains the name, he must state the symbol.)

C. This procedure continues, with players from each team taking turns.

V. Win Criteria.

A. The student that completes the procedure of picking the correct pile and orally stating the correct symbol or name for his card receives one point.

B. A time limit for the game is set by the instructor; the team with the most number of points at the end of this time period wins the game.

C. The teacher or a student serves as "checker" in the game, making sure the game is played correctly, the correct pile is selected, and the correct answer is given. A check list can be constructed by the teacher for use by all the game checkers. The contents of the check list will obviously be determined by the area of the Periodic Chart being studied.

VI. Debriefing.

A. The following questions may be appropriate:
   1. What does a Group Number mean?
   2. What is the relationship between a Family and a Number?
   3. What is the relationship between proper names or symbols and Group Numbers?

B. Test according to the behavioral objectives.

VII. Results of Tryout.

FILLAFORM

I. Overview.

A hybrid game designed to encourage students to follow written directions accurately, FILLAFORM can be played with students from sixth grade to the end of junior high. It is a game which the whole class can play at one time, no matter what the class size.

By substituting real forms, such as a college application or a school registration form, in place of those mentioned in the game, the teacher can prepare students to fill out any form.

II. Objectives.

A. Behavioral.

1. Given an application form like that in section IV, B, 1, the student should be able to complete it, in writing, with 100% accuracy.
2. Given a written test of 10 questions like that in Section IV, B, 2, the student should be able to show that he can follow directions by completing it, in writing, with 100% accuracy.
3. Given a ballot like that in Section IV, B, 3, the student should be able to show that he can interpret instructions by completing it, in writing, with 100% accuracy.

B. General.

The student should become familiar with various types of forms and with the phraseology generally used on forms and tests.

III. Materials and Game Components.

A. Needed Materials.

1. Three duplicating masters and a supply of duplicating paper in three different colors, allowing at least two sheets of each color per child in the class.
2. A supply of red counters.
3. Three cardboard boxes, to be used in the balloting.
4. Red pencils (one/student) and regular pencils (one/student).
5. Optional: Three badges for clerks (can be made of colored construction paper).

B. Construction of Game Components.

1. Registration card:

   On paper of color 1, duplicate copies of a registration card of the following type:

NAME: (Print)		SEX M F ☐ ☐	DATE OF BIRTH:
LAST FIRST MIDDLE INITIAL			DAY MONTH YR.
RESIDENCE:			
NO. STREET	CITY, TOWN OR BOROUGH	COUNTY	STATE
OCCUPATION:	PLACE OF EMPLOYMENT:	ADDRESS: (CITY AND STATE)	
PLACE OF BIRTH:	Mark X in one block: CITIZEN ☐ NATURALIZED CITIZEN ☐	Check one: SINGLE ☐ MARRIED ☐ DIVORCED ☐	
HEIGHT:	WEIGHT:	COLOR OF HAIR:	COLOR OF EYES:
I HEREBY SWEAR OR AFFIRM THAT I AM A CITIZEN OF THE UNITED STATES OF AMERICA. _______________ SIGNATURE			

2. Written test:
On paper of color 2, duplicate copies of a test of the following type:

1. Print your name under this line ____________________

____

2. Circle the number two: 4, 2, 10, 7

____

3. Put an X under your favorite color:
brown blue red green yellow

____

4. Put a line above the room where lunch is served:
library cafeteria gymnasium

____

5. Underline in red the animal in this sentence:
He shot the fox.

____

6. Draw squares around any two of these numbers:
1 3 4 9 10

____

7. Delete one of the following states:

Florida Pennsylvania California Texas

8. Print "cat" in capital letters:

9. Mark with parentheses all of the following dates:

April 1st Dec. 25th Feb. 14th

10. Check three boxes:

apple ☐ pear ☐ grape ☐ plum ☐ cherry ☐

3. Ballot:
On paper of color 3, duplicate copies of a ballot of the following type:

OFFICIAL BALLOT

Directions:

1. Place the mark X in the block after the candidate of your choice.
2. Use pencil.
3. Remove the top marked corner of this ballot.

President (Vote For One)	Senator (Vote For One)
TINY TIM ☐	DONALD DUCK ☐
BIG BEN ☐	MICKEY MOUSE ☐
SLIM JIM ☐	YOGI BEAR ☐

Representative (Vote For Two)	Governor (Vote For One)
TARZAN ☐	TOM ☐
AQUAMAN ☐	JERRY ☐
POPEYE ☐	HUCKLEBERRY HOUND ☐

AMENDMENT. CHECK ONE.

THERE WILL BE NO SCHOOL TWENTY-FIVE DAYS BEFORE CHRISTMAS AND TWENTY-FIVE DAYS AFTER EASTER.

YES ☐ NO ☐

IV. Procedures.

A. The teacher chooses three capable children to act as "clerks".

B. The class is then divided into three teams grouped in three separate parts of the room.

C. Each clerk receives:

1. A large, brightly colored badge with "clerk" written on it (optional).
2. A specimen Registration Card correctly completed.
3. A specimen Test Form correctly completed.
4. A supply of blank Registration Forms.
5. A supply of blank Test Forms.
6. A supply of blank Ballot Forms.
7. A supply of red counters.

D. At a given signal from the teacher, all the members of each team go and receive a REGISTRATION form from ONE of the clerks. This they take back to their desks and complete accurately.

E. On completion of the registration form, the team member returns to one of the clerks for checking.

IF CORRECT:	IF INCORRECT:
Clerk exchanges form for 1. A TEST form 2. ONE COUNTER	Clerk indicates the area in which the error was made (he does not explain the error). The team member is given a new blank registration form to complete.

F. On receipt of the TEST form and counter, the team member puts the counter in a safe place. He then completes the TEST form.

G. On completion of the TEST form, the team member again returns to one of the clerks.

IF CORRECT:	IF INCORRECT:
Clerk exchanges the form for: 1. A BALLOT 2. TWO COUNTERS	Clerk indicates area of mistake and gives team member a new blank test to complete.

H. On receipt of the ballot and two counters, the team member puts his new counters in a safe place and completes the ballot according to the instructions.

I. Student takes completed ballot to the TEACHER for checking.

IF CORRECT:	IF INCORRECT:
Student receives FIVE COUNTERS and he can now place his ballot in his own team's ballot box to indicate that he has finished.	Incorrect ballot is confiscated and a new blank is given to be completed.

J. At the end of a set time period (e.g., 30 minutes) all work must stop.

K. Each team counts its total number of counters.
Each team counts the total number of ballots in its ballot box.

V. Win Criteria.

A. The winning team is the one with the most counters.
B. The winning players are the ones who have put their ballots into the box in the given time period.
C. The overall winner is the first student to place his ballot into his ballot box.

VI. Debriefing.

A. Distribute forms filled in during the game.
The following questions may be appropriate:

1. Ask winning team:
    a. How many complete BALLOTS did your team have?
    b. What helped you to win?
2. Ask remainder of class:
    a. If one team had more complete ballots than the winning team, ask if they can tell why they did not win.
    b. What mistakes do you think you made in playing the game?
    c. How could you improve your performance?
3. Ask clerks:
What common mistakes were made?

VII. Results of Tryout

FRACTION TRACK

I. Overview.

This board game teaches equivalent fractions to pupils in the intermediate grades. It is a game in which the entire class can participate.

The same format can be used with other areas which lend themselves to the "discovery" method of learning.

II. Objectives.

A. Behavioral.

1. Given a list of 50 proper fractions found in the game (see Appendix A), the student should be able, without the aid of the Discovery Fraction Chart (see Appendix B), to write one equivalent fraction for each of the 50 problems. The lower limits of acceptable performance will be 39 correct responses in a 20 minute period.
2. With the aid of the Discovery Fraction Chart (see Appendix B), the student should be able to show that he understands the concept of the term "equivalent fraction" by writing three different sets of equivalent fractions for each of the following fractions:

$\frac{2}{6}$ = _____ = _____ = _____

$\frac{16}{24}$ = _____ = _____ = _____

$\frac{20}{30}$ = _____ = _____ = _____

$\frac{14}{16}$ = _____ = _____ = _____

The lower limits of acceptable performance will be 10 correct responses in a 10 minute period.

3. Given the following four sets of fractions, each containing one non-equivalent fraction, the child without the aid of the Discovery Fraction Chart, and in a 10 minute period, should be able to cross out the fraction that does not belong, so that each set contains only equivalent fractions.

$\cancel{\frac{16}{20}}$, $\frac{15}{20}$, $\frac{9}{12}$, $\frac{3}{4}$

$\frac{9}{24}$, $\cancel{\frac{3}{4}}$, $\frac{3}{8}$, $\frac{6}{16}$

$\frac{1}{8}$, $\frac{3}{24}$, $\cancel{\frac{3}{18}}$, $\frac{2}{16}$

$\frac{4}{5}$, $\frac{8}{10}$, $\frac{16}{20}$, $\cancel{\frac{13}{20}}$

B. General

1. Because the child is provided with an opportunity to explore a procedure for comparing fractional numbers, he should be led to develop an intuitive notion of fractions as numbers.
2. Without verbalizing any rule, the child should discover, through the use of the Discovery Fraction Chart, that multiplying both terms of a fraction by the same number is equivalent to multiplying the fractional number by 1 and that each equivalent fraction names the same number, for example, $\frac{2}{4} \times \frac{\boxed{8}}{\boxed{8}} = \frac{16}{32}$.

III. Materials and Game Components.

A. Needed Materials.

1. 1 pack of 5" X 8" index cards.
2. 4 pieces of 22" X 28" poster board.
3. Felt-tip markers of different colors.

B. Construction of Game Components.

1. A game board representing a race track. (See Appendix C for diagram and measurements.)
2. A Discovery Fraction Chart for each participant (See Appendix B).
3. A deck of 5" X 8" index cards on which are printed problems connected with equivalent fractions. (Level of difficulty and types of problems used can be varied according to the teacher's judgment.) See Appendix A for examples of these problems.
4. A blank answer sheet for each child to use during the game.
5. 5 small model cars to move on the gameboard.

IV. Procedures.

A. Arrange the participants into five teams or rows.

B. Appoint an "Auto-checker" on each team to check the answers of a team other than his own. The procedure for this is explained in E and F.

C. When the game begins, a "Flagmen" (teacher or selected student) takes the top card from the shuffled deck of problems. He holds the problem so the entire class can see it and reads it to them.

D. Each student in the class then uses his Discovery Fraction Chart to determine the answer and writes it on his answer sheet after number one. The time allowed to compute the answer can be determined by the teacher.

E. The "Flagman" (who controls the race) then announces or writes on the board, the correct answer which is on the question card. The "Auto-checkers" check the answers of a team other than their own.

F. The "Auto-checkers," when asked by the "Flagman," then state the number of correct responses made by the team they have checked. If, for example, five of seven children on a team have the answer correct their team's car will be moved ahead five spaces on the gameboard.

G. This process is repeated until there is a winner.

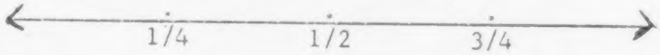
V. Win Criteria.

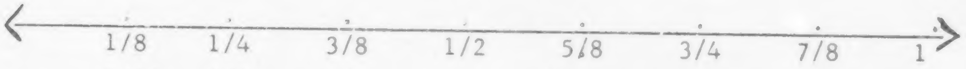
The first team to reach the "Finish" position on the gameboard is the winner.

VI. Debriefing.

A. The following questions may be appropriate:

1. Ask the winning team.
   - a. Why do you think you won the game?
   - b. Did you use the Discovery Fraction Chart? If so, how did it help you find your answers? If not, how did you find your answers? (It is hoped that children will verbalize techniques used for finding equivalent fractions.)
   - c. Can you think of another way in which you could discover fractions? (Use number lines. An example:





2/16 2/8 6/16 2/4 10/16 6/8 14/16 2/2)

   - d. If John had 4/8 of a pie and Jack had 1/2 of a pie, what would be the difference in the size of the pie? What would be the difference in the size of each piece of pie?
   - e. Look at your Discovery Fraction Chart. Notice that $\frac{16}{24}$ is the same as $\frac{2}{3}$. Which fraction would you prefer to use when talking about this fraction? Why? (It is the "simplest term.")
2. Ask the team which did not win:
   - a. Why do you think you did not win the game?
   - b. How did the Discovery Fraction Chart help you?
   - c. How many equivalent fractions can you find for $\frac{2}{8}$?
   - d. If you played the game again, what could you do to make sure that you would have a winning team?
   - e. Why are $\frac{2}{3}$, $\frac{16}{24}$, and $\frac{6}{9}$ equivalent fractions?
3. General questions:
   - a. What is an equivalent fraction?
   - b. How many different numerals can we write for $\frac{1}{4}$?
   - c. How can we find the equivalent fractions for $\frac{9}{12}$ without the aid of the Discovery Fraction Chart?
4. Other questions may be deemed appropriate by the teacher.

B. Test according to the behavioral objectives.

VII. Results of Tryout.

Appendix A

(Fourth Grade Level)

$\frac{6}{9} = \frac{\boxed{2}}{3}$

$\frac{4}{9} = \frac{\boxed{8}}{18}$

$\frac{3}{9} = \frac{\boxed{6}}{18}$

$\frac{1}{6} = \frac{\boxed{2}}{18}$

$\frac{1}{2} = \frac{\boxed{2}}{6}$

$\frac{2}{3} = \frac{\boxed{4}}{6}$

$\frac{1}{3} = \frac{\boxed{6}}{18}$

$\frac{1}{9} = \frac{\boxed{2}}{18}$

$\frac{3}{6} = \frac{\boxed{6}}{12}$

$\frac{1}{2} = \frac{\boxed{8}}{16}$

$\frac{2}{6} = \frac{\boxed{6}}{18}$

$\frac{3}{6} = \frac{\boxed{1}}{2}$

$\frac{2}{6} = \frac{\boxed{4}}{12}$

$\frac{3}{9} = \frac{\boxed{1}}{3}$

$\frac{2}{9} = \frac{\boxed{4}}{18}$

$\frac{5}{6} = \frac{\boxed{10}}{12}$

$\frac{7}{12} = \frac{\boxed{14}}{24}$

$\frac{16}{24} = \frac{\boxed{2}}{3}$

$\frac{2}{6} = \frac{\boxed{4}}{12}$

$\frac{5}{8} = \frac{\boxed{10}}{16}$

$\frac{4}{15} = \frac{\boxed{8}}{30}$

$\frac{5}{15} = \frac{\boxed{1}}{3}$

$\frac{7}{15} = \frac{\boxed{14}}{30}$

$\frac{3}{15} = \frac{\boxed{6}}{30}$

$\frac{2}{15} = \frac{\boxed{4}}{30}$

$\frac{1}{15} = \frac{\boxed{2}}{30}$

$\frac{2}{3} = \frac{\boxed{10}}{15}$

$\frac{1}{3} = \frac{\boxed{5}}{15}$

$\frac{5}{12} = \frac{\boxed{10}}{24}$

$\frac{1}{6} = \frac{\boxed{2}}{12}$

$\frac{1}{8} = \frac{\boxed{2}}{16}$

$\frac{10}{15} = \frac{\boxed{2}}{3}$

$\frac{2}{15} = \frac{\boxed{4}}{30}$

$\frac{26}{30} = \frac{\boxed{13}}{15}$

$\frac{16}{24} = \frac{\boxed{2}}{3}$

$\frac{4}{12} = \frac{\boxed{1}}{3}$

$\frac{2}{3} = \frac{\boxed{4}}{6}$

$\frac{1}{6} = \frac{\boxed{2}}{12}$

$\frac{1}{3} = \frac{\boxed{2}}{6}$

$\frac{2}{2} = \frac{\boxed{4}}{4}$

$\frac{1}{2} = \frac{\boxed{2}}{4}$

$\frac{1}{4} = \frac{\boxed{4}}{16}$

$\frac{3}{8} = \frac{\boxed{6}}{16}$

$\frac{2}{4} = \frac{\boxed{4}}{8}$

$\frac{1}{4} = \frac{\boxed{2}}{8}$

$\frac{3}{4} = \frac{\boxed{6}}{8}$

$\frac{2}{3} = \frac{\boxed{6}}{9}$

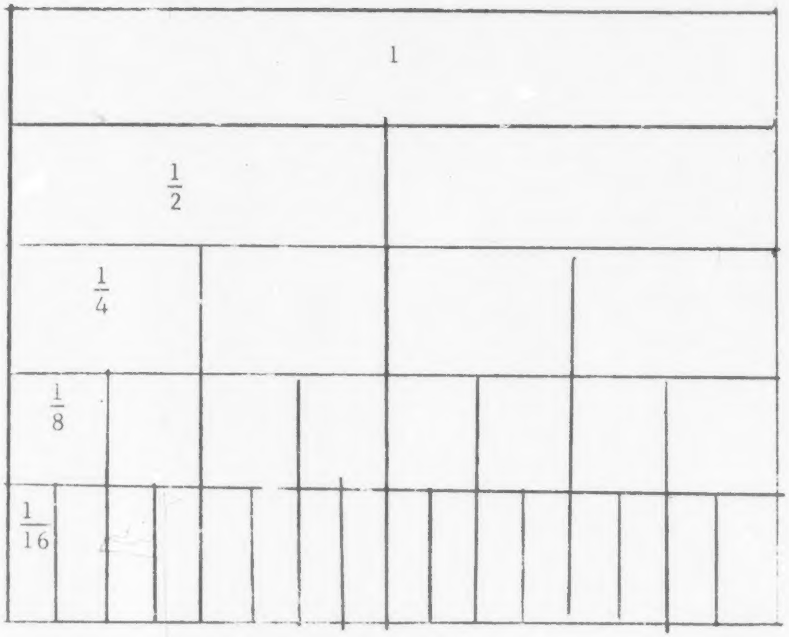
$\frac{2}{3} = \frac{\boxed{12}}{18}$

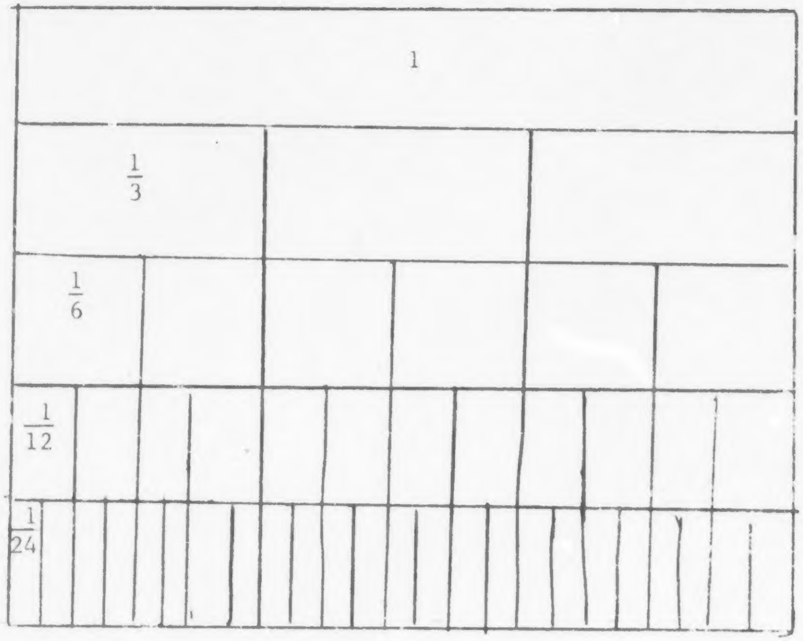
$\frac{1}{6} = \frac{\boxed{3}}{18}$

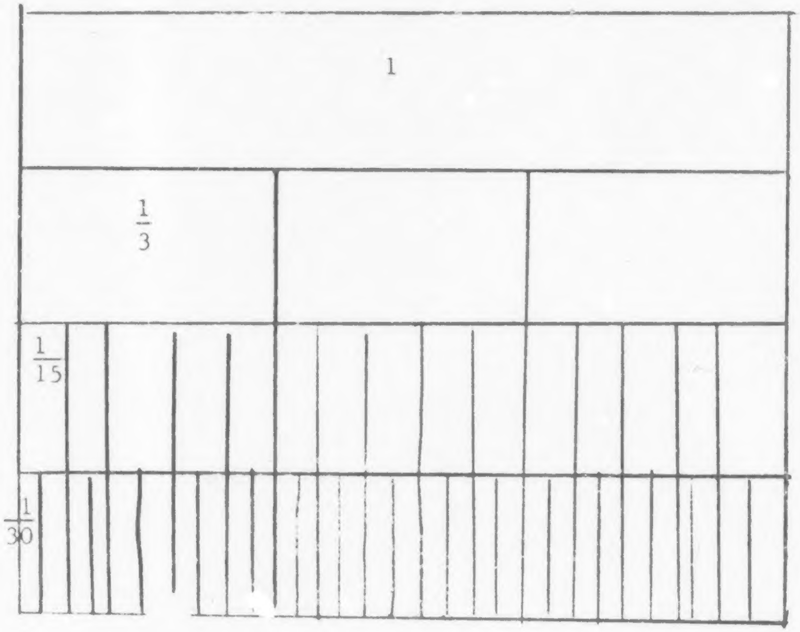
$\frac{1}{3} = \frac{\boxed{3}}{9}$

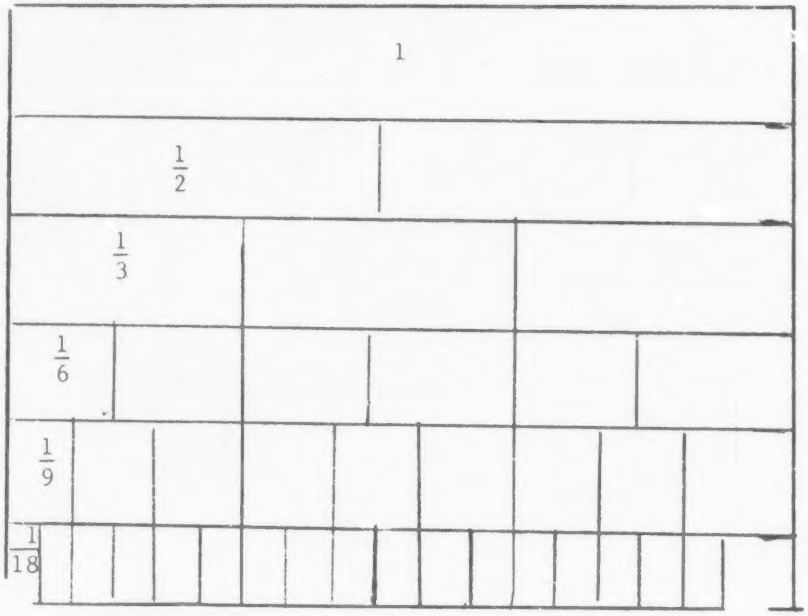
Appendix B

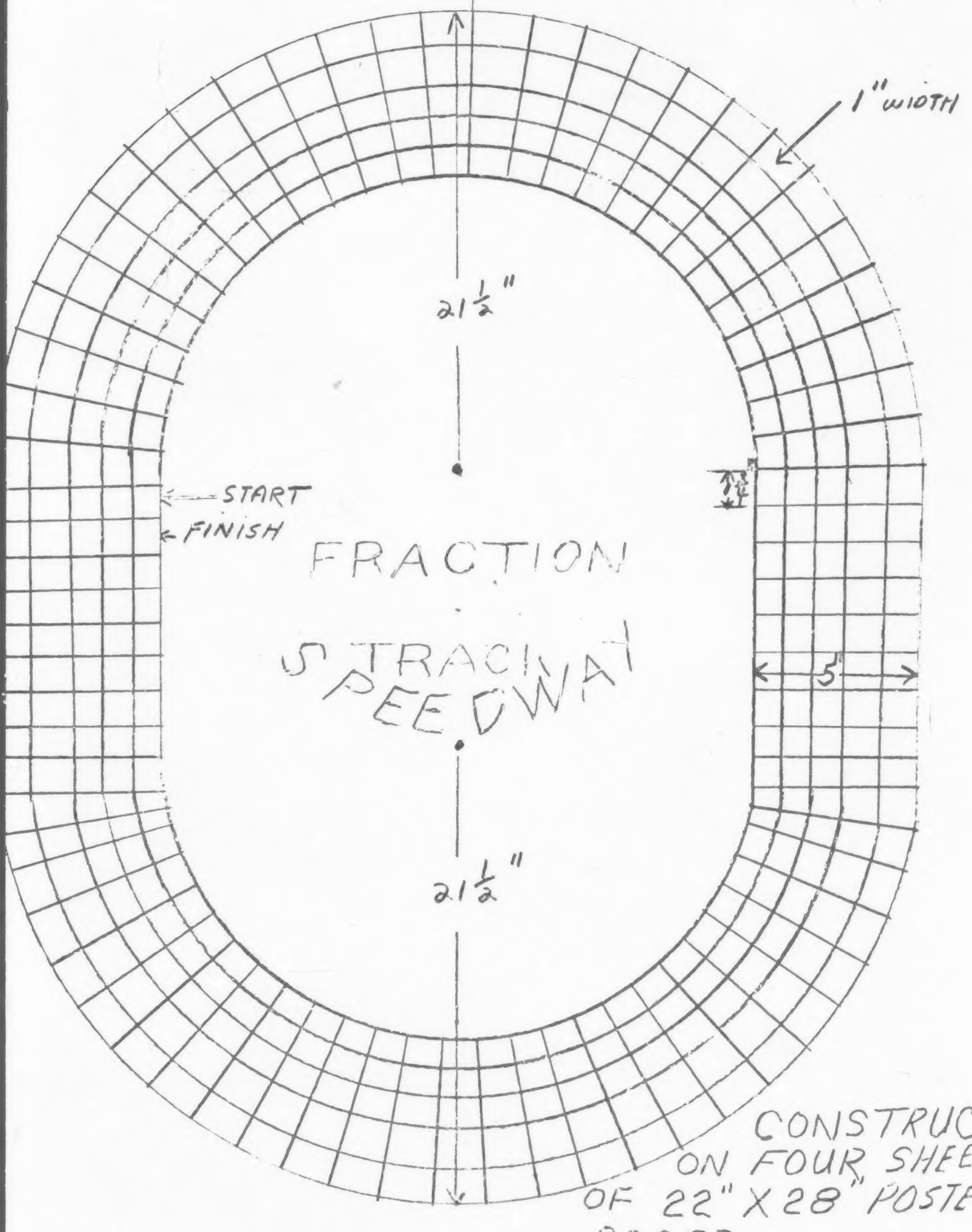
Discovery Fraction Chart


1
$\frac{1}{2}$
$\frac{1}{4}$
$\frac{1}{8}$
$\frac{1}{16}$


1
$\frac{1}{3}$
$\frac{1}{6}$
$\frac{1}{12}$
$\frac{1}{24}$


1
$\frac{1}{3}$
$\frac{1}{15}$
$\frac{1}{30}$


1
$\frac{1}{2}$
$\frac{1}{3}$
$\frac{1}{6}$
$\frac{1}{9}$
$\frac{1}{18}$


1" WIDTH
21½"
START
FINISH
FRACTION
RACING SPEEDWAY
3/4"
5"
21½"

CONSTRUCT
ON FOUR SHEETS
OF 22" X 28" POSTER
BOARD

INFLATION

I. Overview.

This interaction game teaches the concept of inflation to secondary students. Students assume roles of public servants, organized laborers, and self-employed persons. Each tries to increase his income to maintain or raise his standard of living, in the face of rising costs. From nine to sixteen players may participate in the game, which may be played in two or three class periods.

This game also provides practical experience in computing percentages.

II. Objectives.

A. Behavioral.

1. The student will recognize and utilize the different methods available to each occupational group as it attempts to cope with inflation.
2. The student will be able to state causes, effects, and results of inflation.

B. General.

1. To enable the student to experience the frustration of living during a period of inflation.
2. To enable the student to make decisions to cope with an inflationary economy.
3. To provide the student with the opportunity for interaction and competition among the various occupational groups, namely: self-employed, organized labor, public servants.

III. Materials and Game Components.

A. Needed Materials.

1. 6 cards 5" x 8" for "Profile Cards".
2. 68 cards, 3" x 5" or smaller, of 5 different colors, in the following proportions.
   a. 8 of color A, to be "Public Servant Cards".
   b. 8 of color B, to be "Organized Labor Cards".
   c. 10 of color C, to be "Self-Employed Cards".
   d. 23 of color D, to be "Life Cards".
   e. 15 of color E, to be "Hope Cards".
3. 1 banker's worksheet (Appendix A) and 24 players' worksheets (Appendix B).

B. Construction of Game Components.

1. Write or type the following on the "Profile Cards":

OCCUPATION: TEACHER

Net Monthly Income $800

MONTHLY OBLIGATIONS

Food	$160
Clothing	40
Housing	120
Medical & Drugs	40
Taxes	160
Personal Transportation	120
Insurance, Investment, Education	80
TOTAL	$720

LIMIT FOR DEBT--2 x current income

OCCUPATION: GROCER

Net Monthly Income $2,000

MONTHLY OBLIGATIONS

Food	$100
Clothing	100
Housing	300
Medical & Drugs	100
Taxes	600
Transportation (Personal)	200
Insurance, Investment, Education	400
TOTAL	$1800

LIMIT FOR DEBT--2 x current income

OCCUPATION: HOD CARRIER

Net Monthly Income $1,000

MONTHLY OBLIGATIONS

Food	$200
Clothing	50
Housing	150
Medical & Drugs	50
Taxes	250
Personal Transportation	100
Insurance, Investment, Education	100
TOTAL	$900

LIMIT FOR DEBT--2 x current income

OCCUPATION: DOCTOR

Net Monthly Income $4,000

MONTHLY OBLIGATIONS

Food	$400
Clothing	200
Housing	600
Medical & Drugs	0
Taxes	1200
Transportation	400
Insurance, Investment, Education	800
TOTAL	$3600

LIMIT FOR DEBT--2 x current income

OCCUPATION: POLICEMAN

Net Monthly Income $500

MONTHLY OBLIGATIONS

Food	$100
Clothing	25
Housing	75
Medical & Drugs	25
Taxes	100
Personal Transportation	75
Insurance, Investment, Education	50
TOTAL	$450

LIMIT FOR DEBT-- 2 x current income

OCCUPATION: ELECTRICIAN

Net Monthly Income $1,500

MONTHLY OBLIGATIONS

Food	$300
Clothing	75
Housing	150
Medical & Drugs	75
Taxes	375
Personal Transportation	150
Insurance, Investment, Higher Education	225
TOTAL	$1350

LIMIT FOR DEBT--2 x current income

2. Write or type the following on the "Public Servant Cards":

EVERYONE PAYS $50.

EVERYONE PAYS $50 EXCEPT PUBLIC SERVANT.

EVERYONE PAYS $100 EXCEPT PUBLIC SERVANT.

EVERYONE PAYS $100.

EVERYONE PAYS $150.

EVERYONE PAYS $150 EXCEPT PUBLIC SERVANT.

NO!

NO!

3. Write or type the following on the "Organized Labor Cards":

STRIKE SETTLED QUICKLY -- 5% INCREASE -- NO WORK LOSS.

STRIKER GETS 20% INCREASE IN SALARY
MUCH NEGOTIATION
WORK LOSS -- PAY BANK 10% OF LAST MONTH'S INCOME.

STRIKER GETS 20% INCREASE IN SALARY
MUCH NEGOTIATION
WORK LOSS -- PAY BANK 10% OF LAST MONTH'S INCOME.

STRIKER GETS 20% INCREASE IN SALARY
MUCH NEGOTIATION
WORK LOSS -- PAY BANK 10% OF LAST MONTH'S INCOME.

NO! WORK LOSS -- PAY BANK 5% OF LAST MONTH'S INCOME.

STRIKER GETS 10% INCREASE IN SALARY
WORK LOSS -- PAY BANK 5% OF LAST MONTH'S INCOME.

STRIKER GETS 10% INCREASE IN SALARY
MUCH NEGOTIATION
WORK LOSS -- PAY BANK 5% OF LAST MONTH'S INCOME.

STRIKER GETS FULL REQUEST
MUCH ARBITRATION TIME CONSUMED
WORK LOSS -- PAY BANK 20% OF LAST MONTH'S INCOME.

4. Write or type the following on the "Self-Employed Cards":

CLIENTS GO ELSEWHERE -- INCOME REDUCED 10%. (2 cards)

CLIENTS GO ELSEWHERE -- INCOME REDUCED 20%.

YES. (7 cards)

5. Write or type the following on the "Life Cards":

RICH UNCLE DIES
RECEIVE INHERITANCE FROM BANK
$500.

COLLEGE TUITION INCREASES
PAY BANK $100.

INVESTMENT PAID OFF
COLLECT FROM BANK -- $50.

FIRE SALE SAVINGS
BANK PAYS $10.

TERMITE DAMAGE
PAY BANK $500.

EMERGENCY OPERATION
COST BEYOND BLUE CROSS -- $500.

AUTO ACCIDENT
PAY BANK $100.

ARRESTED FOR SPEEDING -- LICENSE SUSPENDED
PAY BANK
FINE -- $15 + TRANSPORTATION COSTS -- $50.

YOUR HORSE LOSES DERBY
PAY BANK $200.

DOG BITES MAILMAN
MEDICAL FEES
PAY BANK $100.

INCOME TAX REFUND
COLLECT 10% OF PRESENT MONTHLY INCOME FROM BANK.

LONGSHOT WINS KENTUCKY DERBY
COLLECT $200 FROM BANK.

YOU WIN CONTEST -- 1 MONTH'S VACATION
1. ACCEPT $500 + PAID VACATION. MISS ONE TURN.
2. YOU MAY REJECT OR SAVE THIS CARD.

LONGSHOT WINS KENTUCKY DERBY
COLLECT $200 FROM BANK.

EMERGENCY OPERATION
COST BEYOND BLUE CROSS -- $500.

RICH UNCLE DIES
RECEIVE INHERITANCE FROM BANK -- $500.

CHOOSE A HOPE CARD. (7 cards)

6. Write or type the following on the "Hope Cards":

YOUR PROPERTY VALUES UP
TAXES UP 10%.

YOUR INCOME TAX REDUCED 10%.

INHERITANCE $100
BANK PAYS YOU THIS MONTH ONLY.

YOUR INCOME TAX REDUCED 10%.

YOUR TRANSPORTATION COSTS DOWN 5%.

YOU WIN $300
BANK PAYS YOU THIS MONTH ONLY.

Bolt
SOCIAL SECURITY UP
ADD 10% TO PRESENT OBLIGATIONS OF INSURANCE, INVESTMENT.

YOUR PROPERTY VALUES UP 10%
TAXES UP 10%.

Bolt
HOUSE MAINTENANCE UP 10%
ADD 10% INCREASE TO MONTHLY OBLIGATIONS.

Bolt
MEDICAL SUPPLIES INCREASE 10%
PAY 10% INCREASE EACH MONTH.

Bolt
INCOME TAX INCREASED 10%.

Bolt
FOR FLOOD DAMAGE PAY 50%
HOUSING OBLIGATION IMMEDIATELY.

Bolt
AUTO UPKEEP INCREASES 10%
ADD 10% TO TRANSPORTATION.

Bolt
FOOD PRICES UP
ADD $20 TO PRESENT OBLIGATION.

Bolt
SCHOOL MERGER
TAX DOWN 5%.

7. Reproduce the banker's worksheet and the players' worksheets, as indicated in Appendices A and B.

IV. Procedures.

A. Give the following instructions to the players:

1. General instructions.

   Your goal is to increase your own purchasing power in proportion to your income. If extra money is needed you may borrow from the bank but debts may not exceed a figure equal to two times your latest monthly income. Interest on debts is computed at $1.00 debt and all parts thereof and must be paid at the beginning of each month. A player may have one extra playing period to arrange his finances to this format -- if not -- bankruptcy. Inflation has beaten you!!!

2. Permitted activities of the different occupational groups:

   a. SELF EMPLOYED.

      Doctor   Grocer

      These players may raise their incomes by DECREE during negotiation period. They may raise their income 5% without risk during each month. However, if either decides on an income raise above 5% he must draw from a set of cards. He chooses 1 card for each additional 5% raise requested.....he must settle for the WORST of the cards drawn.

   b. ORGANIZED LABOR.

      Hod Carrier   Electrician

      These players may raise income by a REQUEST during the negotiation period. However, should the majority of players not reach a settlement during this period, the player may decide to strike. The outcome of his strike is determined when he draws his arbitration card.

   c. PUBLIC SERVANTS.

      Teacher   Policeman

      These players may receive an increase in salary only in RESPONSE TO AN APPEAL during the negotiation period. If the request is refused, (because of resultant tax increase for other players) there is nothing they can do; however, they may draw from cards to determine whether or not the Community is penalized.

3. Functions of banker and accountants.

   a. BANKER AND CLERKS.

      DUTIES
      1. Manage game and maintain order.
      2. Collect or dispense money as directed and record transaction.
      3. Summarize percentage increases at the end of each negotiation round.

   b. ACCOUNTANTS

      DUTIES
      1. Check math on Work Sheet for each assigned player or players.
      2. Provide paper for computations.

4. Use of cards and worksheets.

a. Profiles and Work Sheets.

One player operates according to the way of life generally accepted sociologically for his particular character. A role may be shared by a team of two players. Each player or team fills out two work sheets, one for his own use and one for the Accountant.

b. Life Cards.

These are drawn by each player at start of each new period of play. Some of these will direct the player to draw a HOPE CARD.

c. Hope Cards.

May be drawn only at the direction of the LIFE CARDS. Some of these are BOLT CARDS, which affect all members of the economy.

d. Cards for use in salary increase in any group of players.

1. Self Employed Cards.

Cards contain: 7 acceptances
2 ten (10%) decreases in income
1 twenty (20%) decrease in income

2. Organized Jobs.

Received: Loss of present month income due to work loss.

1 - Full amount - 20%
3 - 20% increase - 10%
2 - 10% increase - 5%
1 - 5% increase - No
1 - No increase - 5%

3. Public Servant.

2 - No increase
2 - $50 penalty
2 - $100 penalty
2 - $150 penalty
3 of the above cards contain no penalty for the Public Servant.

5. Order of Game Play.

a. Distribution of Profile Cards and Work Sheets. . . . Players check on salary, responsibilities, and generally familiarize themselves with the role to be assumed.

b. Payment of salary by banker and payment of obligations by players to banker. All money rounded off to nearest dollar.

c. Drawing of Life Cards by each player and consequent adjusting of Work Sheet.

d. Negotiation (Interaction Period). Each player may check financial status and decide whether or not to seek raise in salary or to pass, depending on present financial standing as a result of life cards and negotiation.

e. Resultant adjustments are made on Work Sheet.

f. New salaries are paid to each player to introduce new period of play.

g. If desired, negotiation time limit may be established.

V. Win Criteria.

Those players who have avoided bankruptcy are considered winners. Students may determine additional criteria for ranking the successful players.

VI. Debriefing.

A. The following questions may be appropriate:

1. Who won the game and why?
   Who lost the game and why?
2. From the playing of the game do you have some idea of the concept of inflation?
3. How did inflation affect public servants?
4. How did organized labor fare?
5. How did the self-employed fare?
6. Does one group seem to be more affected than any of the others?
7. In an inflationary period, what is the relationship between the increase in prices and personal income, generally?
8. What can people do in actual life to keep their income ahead of inflation?
9. How would you now define inflation?
10. Can you control inflation by freezing incomes?

VII. Results of Tryouts:

Appendix A

BANKING SHEET

Adjustments Affecting General Economy

Month 1.	Month 4.
Month 2.	Month 5.
Month 3.	Month 6.

I. Those whose income may be raised by decree.

	Doctor				Grocer		
	Income	Loan	Interest		Income	Loan	Interest
1.				1.			
2.				2.			
3.				3.			
4.				4.			
5.				5.			
6.				6.			

II. Those whose income may be raised by the proceedings of organized labor.

	Hod Carrier				Electrician		
	Income	Loan	Interest		Income	Loan	Interest
1.				1.			
2.				2.			
3.				3.			
4.				4.			
5.				5.			
6.				6.			

III. Those whose income may be raised by request.

	Teacher				Policeman		
	Income	Loan	Interest		Income	Loan	Interest
1.				1.			
2.				2.			
3.				3.			
4.				4.			
5.				5.			
6.				6.			

Appendix B

WORKSHEET FOR GAME OF INFLATION

Occupation ____________ Starting Monthly Income ____________

1st Adjusted Income ____________

2nd Adjusted Income ____________

3rd Adjusted Income ____________

		— Month —				— Month —				— Month —			
Monthly Obligations	Starting Cost	% Increase	Dol. Val of Increase	+ Starting Cost	= New Cost	% Increase	Dollar Value	+ Cost Carr'd	= New Cost	% Increase	Dollar Value	+ Cost Carr'd	= New Cost
Food													
Clothing													
Housing													
Medical and Drugs													
Taxes													
Personal Transportation													
Insurance, Investments													
TOTAL													

Records For Debts Accumulated

Debts cannot be accumulated in an amount greater than a figure of two times the current income or bankruptcy occurs.

— — — — — — — — —

Interest for loans is computed according to $1 for every $100 indebtedness and parts thereof. Interest must be [illegible] monthly.

Borrowed ________

Paid ________

Balance ________

% Income On Hand ___

____

Balance Brought Forward ________

Borrowed ________

Paid ________

Balance ________

% Income On Hand ________

Balance Brought Forward ________

Borrowed ________

Paid ________

Balance ________

% Income On Hand ________

MAP-O-RAMA

I. Overview.

This board game was designed to teach map reading skills (population, natural resources, political, products, geographic relief, and precipitation maps) to children in grades five through seven. Six to 36 players can play at one time; players play in teams.

This same format can be used with sets of historical maps from United States or world history classes or with other types of geographical maps.

II. Objectives.

A. Behavioral.
In this game, the following types of maps concerning the United States are used: political, graphic relief, precipitation, population, products, and natural resources. Corresponding to each map is a set of six questions the answers to which appear on the map. (See Section III, B, 3 sample.) Given the six maps, the student should be able to demonstrate his map reading skill by answering 30 of the 36 possible questions.

B. General.
It is hoped that through playing a game in teams, the class members will learn to to interact and cooperate successfully with one another.

III. Materials and Game Components.

A. Needed Materials.
  1. 36 3" X 5" index cards (or one card per question).
  2. Four large pieces of poster board.
  3. A wooden cube, ½" square on each side.

B. Construction of Game Components.
  1. A large map of the United States mounted on poster board or on a bulletin board can serve as the game board. Across this map from the East Coast to the West Coast extends a six lane highway on which the players make their moves. Each lane of the highway is divided into 25 equal segments or moves. Strings attached at both ends of the highway serve as "tracks" along which cardboard or plastic model cars can move.
  2. A set of six maps for each student including:
     a. Political Map
     b. Precipitation Map
     c. Products Map
     d. Population Map
     e. Graphic Relief Map
     f. Natural Resources Map
  3. 36 questions (these can be found in textbooks and reproduced on a Thermofax machine), or as many as desired, which can be answered using the above maps ,printed on 3" X 5" index cards. Teachers may use questions of their own choice. Below are some sample questions.

I. Population Map.

A. Which parts of the United States are most heavily populated?

B. Which state has the fewest people in it?

C. Name three states in the least populated area of the United States?

D. Is the state you live in sparsely or heavily populated? Justify your answer.

E. Name the three cities in the United States which have the most people living in them.

F. Which state in the Rocky Mountain Area is the most heavily settled?

II. Natural Resources Map.

A. Where are the largest deposits of anthracite coal found?

B. Name three states in which salt is mined.

C. In which part of the country is the most oil found?

D. Bauxite is used to make aluminum. Where in the United States is a bauxite mine located?

E. Some people make their livings from the sea. What kinds of fish are netted off our Pacific Coast?

F. Fertile soil is a great resource. Where is our country's largest farming region?

III. Political Map.

A. Which state borders Texas on the west?

B. What four states border Lake Michigan?

C. What state is in the southern most part of the United States?

D. What is the capital of Virginia?

E. What is the name of the river separating Pennsylvania and New Jersey?

F. Which state on the Pacific coast has the longest coastline?

IV. Products Map.

A. This map could be made with pictures glued on cards; the designers of the game used pictures of:

1. Wheat
2. Oranges
3. Potatoes
4. Lumber
5. Corn

Questions involving these products could then be written.

V. Graphic Relief Map.

A. Which lakes in the Northern United States were created by glaciers digging out great depressions?

B. Which long river system drains the interior part of the United States?

C. When streams or rivers flow into valleys surrounded by mountains,they form lakes. Name a lake formed in this manner.

D. Are any mountains in the East over 10,000 feet in elevation? If so, which ones?

E. Weathering wears away mountains and makes them smaller. Which mountain chain on the mainland of the United States is the oldest?

F. Which valley in the continental United States is the lowest?

VI. Precipitation Map.

A. Moisture may fall in the form of rain, snow, sleet or hail.

How much moisture falls per year in the northern-most part of the United States?

B. In the Southwest are many deserts; what color indicates this dry land?

C. Trees need 30 inches of rainfall a year. What areas in the United States do not contain many trees for this reason?

D. Cotton needs 23 inches of rainfall a year to grow well. Is the Southeastern United States the only part of our country that has this much rainfall?

E. Portland, Oregon, is in the Northwestern part of the United States. What is its average annual rainfall?

F. What is the average annual rainfall in the Midwestern wheat-growing region of our country?

4. A wooden cube, ½" on each side, with 100, 200, and 300 printed on its six sides. This cube can be called a "mil-o-cube."
5. Six cardboard or plastic model cars to move on the gameboard.

IV. Procedures.

A. The class is divided into six teams, and a set of six maps is distributed to each team member.

B. A child from Team One comes to the front of the room and selects a question card from the deck. He reads the question to the class and then returns to his seat to use his maps before giving his answer. All other players also try to select the appropriate map and find the correct response. A time limit for responses can be set at the teacher's discretion.

C. If the child from Team One does not respond correctly, the first child on Team Two gets a chance to answer. This rotation among teams continues until the question is correctly answered. (The teacher rules on the accuracy of the answers.) A response is considered correct only when the appropriate map is selected and an accurate response to the question given.

D. The child who answers correctly then rolls the "mil-o-cube" to determine how many moves his team may make on the game board. Each space on the game board highway equals 100 miles, so that if the student throws "300," his team can move three spaces.

E. This process is repeated with the children on the teams taking turns until one team reaches the West Coast.

V. Win Criteria.

The team which first reaches the West Coast on the game board is declared the winner. It is suggested that the game be replayed several times.

VI. Debriefing.

A. The following questions may be appropriate:
1. What types of maps did we use in the game to provide information?
2. How might these maps be helpful to us in our study of the United States?
3. Which type of map did you find most difficult to use? Why?
4. Other questions considered appropriate by the teacher.

B. Test according to the behavioral objective.

VII. Results of Tryout.

MERRY MAILMAN

I. Overview.

This hybrid game teaches letter recognition. "MERRY MAILMAN" can be used in kindergarten or first grade after letters have been introduced. It is an active team game involving the whole class. The decks need not contain all of the letters in the alphabet. In the early stages of "letter learning." The game can be played using only four or five different letters.

The same format can also be used in the teaching of blends, words, numerals, addition and subtraction.

II. Objectives.

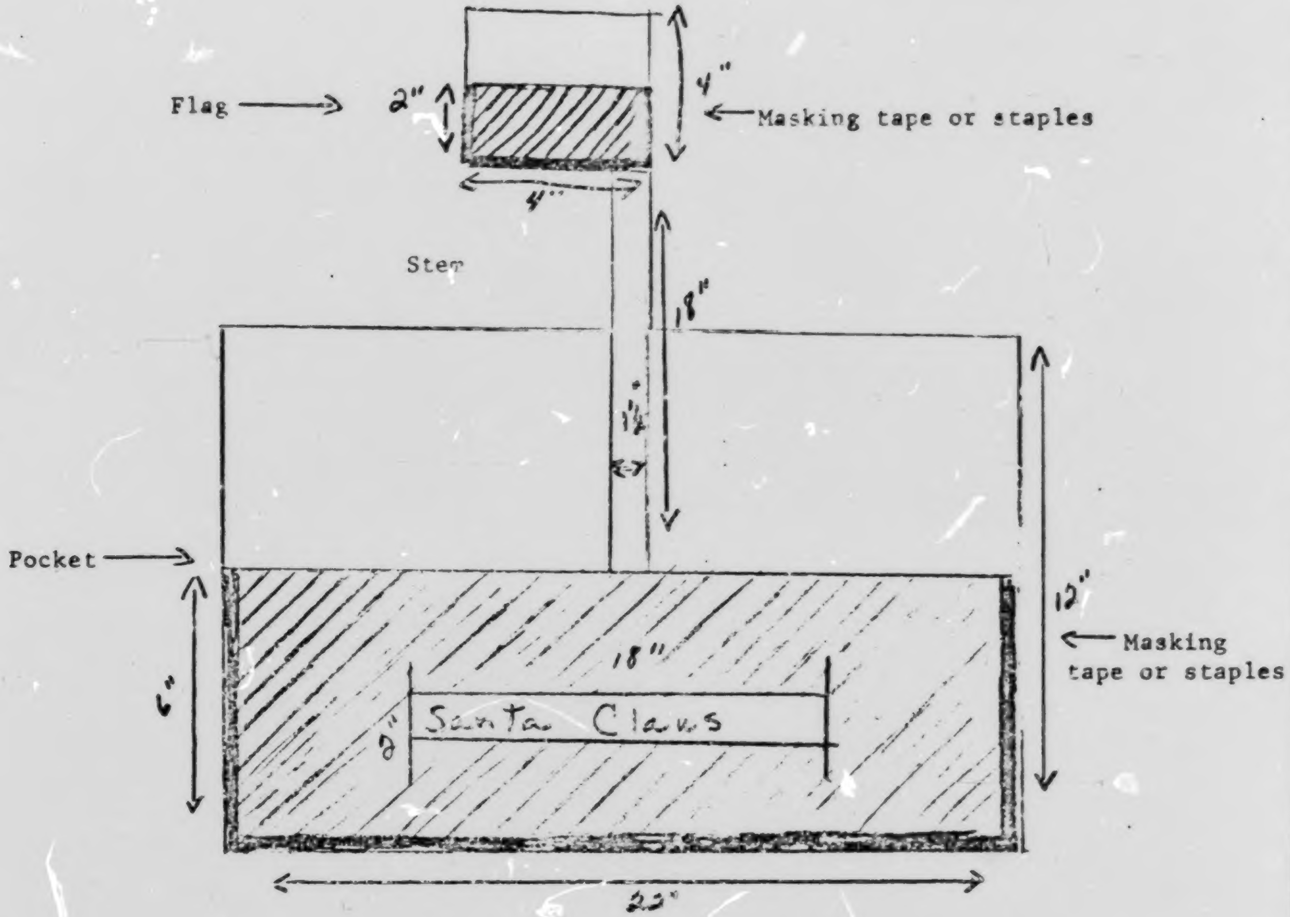
A. Behavioral.
   1. Given a scrambled list of 52 letters in the alphabet (26 capital; 26 small), the child should be able to point to the letters which he is asked to locate.
   2. Given a scrambled set of 52 cards with one letter of the alphabet per card (26 capital; 26 small) placed face down, the child should be able to name correctly nine out of 10 letters which he draws from the pile.

B. General.
   Each child should be able to identify both capital and lower case letters.

III. Materials and Game Components.

A. Needed Materials.
   1. 5 22" X 28" sheets of poster board, one of each color: red, blue, yellow, green, white.
   2. 1 roll of masking tape or a stapler.
   3. 1 black felt-tip marker.
   4. 260 3"X 5" index cards.
   5. 5 rubber bands to keep decks of cards separated.
   6. Paste.

B. Construction of Game Components.
   1. 4 Mailboxes (one for each team):
      a. Attach a 6" X 22" strip of poster board to the bottom of a 12" X 22" piece of poster board of the same color (blue, yellow, green, or white). Use masking tape or staples to attach them so that a pocket is formed. (See the following diagram.)
      b. A name can be put on the mailbox by cutting two slits in the outer portion of the pocket and inserting a 2" X 18" strip of poster board with the desired name printed on it; for example, Santa Claus.
      c. Attach a 2" X 4" strip of red poster board to a 4" X 4" square of red poster board to form a pocket as before. (This is the top portion on the mailbox flag.)
      d. Attach this red flag to the stem (a piece of poster board 18" X 1½"); paste this stem in the large mailbox pocket.


Flag
2"
4"
Masking tape or staples
4"
Stem
18"
1½"
Pocket
6"
18"
Santa Claus
2"
12"
Masking tape or staples
22"

2. Letter cards: five decks are needed (one for each team and one for the caller).
   - Each deck contains two cards for each letter in the alphabet: one capital letter card and one small letter card.

IV. Procedures.

A. Appoint a capable child as caller, and divide the rest of the class into four teams. (If the class consists of more than 20 children, more teams may be necessary.) Each team sits on the floor in a semi-circle on the side of the room opposite the mailboxes.

B. Distribute the identical decks of cards, one to each team and one to the caller. Each team player draws three cards from the deck and places them on the floor in front of him where his team can see them.

C. The caller draws a card from his deck and names it, without showing the card. The other players check their own cards and those belonging to their teammates; the owner of the correct card in each team runs the card to the mailbox. The first runner to place the correct card in the pocket of the red flag is allowed to place the card in the large pocket. (The teacher will have to check the cards.) Other runners must take their cards back "home."

D. Repeat this procedure with caller naming a new letter each time.

V. Win Criteria.

The team with the most cards in its pocket at the end of the given time period wins (time period is established by the teacher).

VI. Debriefing.

A. The following questions may be appropriate:
   1. Why did a certain team win?
   2. What could help you win next time?
   3. Which letters are the most difficult to recognize?
   4. Which letters look alike?
   5. Have each player read the letter cards left in his possession.

B. Test according to the behavioral objectives.

VII. Results of Tryout.

MERRY MI$ER$

I. Overview.

This game deals with some aspects of banking. It is designed for 4th and 5th graders, however it may also be used in 6th grade.

II. Objectives.

A. Behavioral.

1. The child will be able to write out a check.
2. The child will be able to deposit money in a bank.
3. The child will be able to endorse a check.
4. The child will be able to make out a bill of sale.

III. Materials and Game Components.

A. Needed Materials.

1. Each Worker
    - a. Check to endorse (Appendix A-1)
    - b. Deposit slip (Appendix A-2)
    - c. Bill of sale (Appendix A-2)
    - d. Instruction sheet (Appendix C)
2. The Bankers
    - a. Checks to give out (Appendix B)
    - b. Worker account sheets (Appendix B)
    - c. Play money
    - d. Instruction sheet (Appendix C)
    - e. Rubber stamper
3. Storekeepers
    - a. Cards with items and prices (Make up on 3 x 5 cards)
    - b. Bills of sale (Appendix A-2)
    - c. Instruction sheet (Appendix C)

IV. Procedure.

Pre-test (Appendix D)

Instructional Period -- prior to Game.

1. The teacher should discuss the banking process with the student and introduce some basic procedures. (filling out checks, deposit slips, endorsement, etc.). A suggested method which will introduce the game will follow:

a. Each child receives a $50.00 pay check and a deposit slip.

b. Child makes out deposit slip, endorses pay check, and deposits money in the bank. (The teacher is the banker in this stage and also explains how to endorse check and fill out deposit slip.)

c. The teacher gives each child a blank check and a bill of sale and explains how to complete check and bill of sale.

d. The children go to their seats and make out the bill of sale for up to $50.00.

e. Children exchange bills of sale with each other.

f. Each child then makes out a check to the classmate who gave them the bill of sale.

g. The children end up by marking their bills of sale paid and giving the bills of sale as a receipt.

2. The teacher may correlate other subjects at this time. Emphasis can be made on spelling of numbers and months and importance of good writing.

V. Debriefing.

a. Why did you have to endorse your pay check?

b. Why is it advantageous to deposit money in the bank?

c. Why did your bill of sale have to be no more than $50.00?

d. What record do you have, that you have paid your bill?

Stage I. Game.

a. Hand out instruction sheets to all students. (Appendix C).

b. Begin by assigning two cashiers to work in the bank and also select four storekeepers. The rest of the children will be the workers. (Based on a class of 30 students.)

c. The workers receive $100.00 pay check and deposit slip. They endorse check and deposit it in the bank.

d. At the bank the worker receives a checkbook.

e. Worker goes to a store and makes one purchase. He receives a bill of sale.

f. Storekeepers endorse checks then take them to the bank to receive cash for them.

g. Banker will cancel checks and pay storekeeper with cash.

h. Bankers balance workers' accounts.

i. This stage should be repeated again changing the roles of some of the pupils.

Instructions.

A. Bankers

1. Take pay checks and cancel them.
2. Give out check to worker.
3. Record deposit in account.
4. Receive checks from storekeepers and give them cash. Also cancel these checks.
5. Balance workers' accounts.

B. Storekeepers

1. Set up store.
2. Sell to workers.
3. Make out bills of sale.
4. Endorse checks and cash them at bank.
5. Make out deposit slip listing amount on each check.
6. Bring cash back from bank.

VI. Winning Criteria.

Anyone who performs his task successfully is considered a winner.

Debriefing:

a. Use questions from stage I.
b. What did the storekeeper do with the checks you gave him?
c. Why must the bankers balance the workers' accounts?

Post-test

Stage II.

A. Classroom continuation activities (optional).

1. Store competition.
2. Carrying student's bank balance over to replaying of game.
3. Correlation of spending. (Ex., Student buys swimming pool and then buys related items.)
4. Using of actual checks, deposit slips, sales slips.

B. Additional outside activities.

1. Visit to local banks.
2. Outside resources (Banker visiting class.)
3. Student involved in writing article to local newspaper.
4. Visit to department and/or grocery store.
5. Discussion of State and National banks.

APPENDIX A-1

MERRY WORKER'S, INC. CHECK NO. 1

DATE

PAY TO THE
ORDER OF $50.00

FIFTY and $\frac{\text{no}}{100}$ * * * * * * * * * * * * * * * * DOLLARS

SIGNATURE

PAY CHECK
STAGE I

MERRY WORKER'S, INC. CHECK NO. 2

DATE

PAY TO THE
ORDER OF $100.00

ONE HUNDRED and $\frac{\text{no}}{100}$ * * * * * * * * * * * * * DOLLARS

SIGNATURE

PAY CHECK
STAGE II

APPENDIX A - 2

Bill of Sale

Buyer ______________________

Company ______________________

Item	Amount
Total	$

Deposit Slip

Name ______________________

Date ______________________

	Dollars	Cents
Total		

APPENDIX B

WORKER ACCOUNT SHEET ____________________

DATE				
Bank Balance				
Deposit				
Withdrawal				
Balance				

Check No. ________

To ________

For ________

Date ________

Bank Balance ________

Amount this check ________

Balance ________

THE MERRY MISER BANK

Check No. ________

Date ________

PAY TO THE ORDER OF ____________________ $ ________

____________________ Dollars

____
Signature

APPENDIX C

Instructions for players:

BANKERS

You are a banker at the Merry Miser Bank. The workers come to you to deposit their pay checks. They also make out checks in the stores and these checks are brought to you by the storekeepers.

As a banker you are responsible to see that all checks are made out correctly, all pay checks are endorsed, and all accounts balance.

STOREKEEPERS

You are responsible for making out bills of sale, putting out pictures of items* you wish to sell, and seeing that you receive the correct amount of money for the items you sell by cashing your checks at the bank.

*Use pictures from magazines or color object on 3 x 5 card. Put the price of the item on the card also. Each store should have at least 15 items.

WORKERS

You are a worker in downtown Burbank. In the game you receive a pay check of $100.00. You deposit it in a bank.

You go to a store and purchase an item paying with a check.

Your responsibility is to see that you endorse your pay check, make out a deposit slip, correctly fill out a check and be sure not to overdraw your account by keeping an accurate record on your check stub.

APPENDIX D

Name ______________________________

Date ____________________________

1. Find 5 mistakes in the following check and circle them.

THE MERRY MI$ER BANK   Check no. 2

Date Febuary 30, 1969

Pay to the order of Weis Markets $ 78.01

Eighty-seven and $\frac{no}{100}$ ———— Dollars

John Smith
Signature

2. Write True or False before the following statements. Change the false statements by crossing out the incorrect words and filling in correct words.

   a. Only cash may be deposited in a bank.

   b. You must endorse a check in exactly the same way your name appears on the front.

   c. The last three months of the year are October, November, and December.

   d. You must use a hyphen when writing numbers like eighty-seven.

   e. You have $33 in your bank account. You can make out checks for $10, $15, and $9.

3. Underline the correct answers:

   a. The best way to write the date on a check is:

      Jan. 13, 1967
      January 13, 1967
      1/13/67

   b. Which one of the following would not be handled at the bank?

      check
      deposit slip
      bill of sale

   c. [illegible]
      [illegible]

c. Which of the following must the storekeeper do before he can deposit checks received from his customers?

rip off stubs

endorse them

fold them in half

d. When you put money into the bank, you must fill out:

receipt

bill of sale

deposit slip

e. Each time you write a check, you should mark the amount and information on

the check stub

scrap paper

a notebook page

MOD MATH

I. Overview.

This board game teaches the basic processes of addition, subtraction, multiplication, and division and the proper names of arithmetic operations. It emphasize the correlation of symbols, terminology, and arithmetical computations. This game can be used in grades 2-4, and it can be adapted for use at all levels. Entire classes can play.

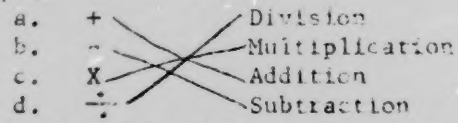
To increase the game's difficulty, different sets of numbers may be added to the problem cards. For older students, different mathematical relationships could be added, eg., square roots, factors, etc.

II. Objectives.

A. Behavioral.

1. Given the arithmetic symbols +, -, x, ÷, and the terms addition, subtraction, multiplication, and division, the student should be able to match terms with symbols by drawing a line from the symbol to its corresponding term.

   Example:



2. The student should be able to compute correctly any problem of addition, subtraction, multiplication, and division used to play this game.

   Example:

   a 3 + 2 =
   b. 3 - 2 =
   c. 3 X 2 =
   d. 3 ÷ 2 =

3. Given the problems used to play this game with the signs of operation omitted and with each problem labeled addition, subtraction, multiplication, or division, the student should be able to insert the appropriate symbol and compute the correct answer.

   Example:

		Problem	Answer
a.	Addition:	3 2	3 + 2 = 5
b.	Subtraction:	4 1	4 - 1 = 3
c.	Multiplication:	2 2	2 X 2 = 4
d.	Division:	3 1	3 ÷ 1 = 3

B. General.

1. MOD MATH should increase the students' familiarity with basic arithmetical operations and symbols.
2. The game should cause a student to compute basic problems more quickly.
3. The student should learn and remember more basic number facts than he has previously remembered.

IV. Procedures.

A. Place the spinning board on the blackboard or a bulletin board. Place the piles of cards on two tables in front of the spinning board.

B. Choose a student game leader and divide the rest of the class into two teams. Align two teams on opposite sides of the room.

C. One student from each team comes to the game materials at a time. The student game leader spins the arm, and it stops on one of the four blocks (addition, subtraction, multiplication, or division). The participants then mentally decide which arithmetic symbol represents the chosen block, remove the symbol card from that pile, and mentally compute the problem face-up on the top of the pile. When the student has finished his mental computations, he orally responds with the answer.

D. The game leader will determine right and wrong answers; he may look at the back of the card if he wishes. He then places that problem at the bottom of the appropriate pile for each team. He awards the team of the student with the first correct answer five points on the official score sheet or on the blackboard.

E. The loser goes to the end of his team's line, and the winner remains in the front to compete with the next player from the opposing team. So long as he continues to win, his team gains five points each time; he stays at the board until he has won four times. Then he must give up his place at the board, even if he has won, to a new member of his team.

V. Win Criteria.

When all the players from each team have been to the front at least once, the game leader ends the game. The team with the highest score wins.

VI. Debriefing.

A. The following questions may be appropriate:
   1. What are the four types of problems used in the game?
   2. What symbols represent these problems?
   3. What does each symbol mean?

B. Give a written test according to the behavioral objectives.

VII. Results of Tryout.

PASS-A-BILL

I. Overview.

Pass-A-Bill is a board game designed specifically for use in an eighth grade American history class. The purpose is to show the journey a bill takes from introduction to passing. Students are to recognize the difficulty and to feel the frustration of getting a bill passed since there are about 10,000 and only a few hundred become the law.

II. Objectives.

A. Behavioral

1. The student should be able to list the steps a bill must take in order to be passed. (The game assumes all bills start in the house committee.)
2. The student should be able to identify the possibilities of what can happen to a bill after it reaches a decision block (house committee, house floor, etc.)

B. General.

1. This game could be used to introduce a unit on the passing of bills.
2. The student by having played the game should be more receptive to the study of the unit.

III. Materials and Game Components.

A. Cards cut 3" x 2½". Use different colors for each decision block.

1. HOUSE COMMITTEE (GREEN)	DUPLICATES OF EACH CARD	TOTAL
a. Approves Bill (Continue)	2	
b. Rejects Bill (Return to Start)	5	
c. Sends Bill Back for Revision (Skip one turn.)	4	
d. Bill under Consideration (Skip one turn.)	4	
		15

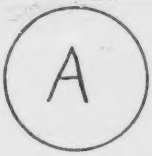
2. HOUSE FLOOR (BLUE)		
a. Passes Bill (Continue)	4	
b. Rejects Bill (Return to Start)	4	
c. Refers Bill to committee for further study. (Return to House Committee block and draw top card)	4	
d. Amends Bill (Skip one turn and then continue.)	4	
		16

3. SENATE COMMITTEE (ORANGE)	DUPLICATE OF EACH CARD	TOTAL
a. Passes bill (Continue)	4	
b. Considers bill (Skip a turn)	6	
c. Rejects bill (Return to start)	4	
		14
4. SENATE FLOOR (RED)		
a. Passes Bill with amendments (Continue to Joint Committee)	4	
b. President requests change in bill (Skip one turn and continue to Joint Committee.)	4	
c. Rejects bill (Return to Start)	2	
d. Passes identical bill (Continue to President)	2	
		12
5. JOINT COMMITTEE (YELLOW)		
a. Committee cannot reach decision. (Return to Start)	2	
b. Holding discussion. (Skip one turn)	2	
c. Decides on compromise bill (Continue)	4	
		8
6. SENATE HOUSE VOTE (PINK)		
a. Approves bill (Continue)	8	
b. Return to Joint Committee for further discussion.	4	
c. House disapproves. (Go back to Start.)	2	
d. Senate disapproves. (Go back to Start.)	2	
		16
7. PRESIDENT (GRAY OR LT. BLUE)		
a. Congress adjourns before 10 days. Bill is vetoed without President's signature.	1	
b. Veto. (Go back to Start.)	1	
c. Skip two turns to see what the President is going to do.	3	
d. Refuses to sign, Congress is still in session. (Bill becomes a law) (You WIN!)	4	
e. Passes! (Your bill is signed.) (You WIN!)	4	
		13

8. SPECIAL EVENTS (WHITE)	DUPLICATE OF EACH CARD	TOTAL
a. Congress adjourns for holiday. (Recess, Back up 2 spaces.)	2	
b. Wild Card - Use to overrule any unfavorable decision. (Use at any time.)	6	
c. Lobbies and Applies pressure in favor of your bill. (Advance 4 spaces.)	2	
d. Sponsoring Congressman has heart attack. (Move back 4 spaces.)	1	
e. Adjournment nears. Congress assigns priority to your bill. (Advance 3 spaces.)	2	
f. Caucus calls for immediate action. (Advance to next decision block, and draw top card.)	2	
		15

B. One game board for every five players.

C. Five plastic bingo markers identified by A, B, C, D, E, on stick tape.



D. Set of dice for each game.

V. Procedures.

1. Board can be used by two, three, four, or five players.
2. Play will be in rotation.
3. Two dice are employed and there are several possibilities for their use.
   - a. Both dice are always rolled.
   - b. If possible, you must use the combined total of both dice.
   - c. If combined total of dice cannot be used but the total on one die will allow you to proceed, you must make that move.
4. You will assume the identity of a bill introduced in Congress. Your objective is to get your bill safely through Congress and have the President sign you into law.
5. You may not proceed beyond a decision block (House Committee, House Floor, etc.) with a roll of the dice.
   - a. You must land directly on a decision block at the end of a move, using the count from one or both dice.

    b. If the individual count from either die places you beyond the decision block, you lose your turn and try again on your next turn.

6. Upon landing on a decision block, you will take the top card from the correct stack and follow the instructions.

7. Upon landing on a block with a star at the completion of your turn, you must draw a white special events card and follow its instructions.

8. Cards on each stack will be shuffled before the game begins. As cards are drawn they are replaced face down on the bottom of the pile.

9. Your objective is to get to the president and receive a favorable decision on your bill. When you have accomplished this, you have completed the game. The game may end when one player has reached this point or continue until all players pass their bill or until time expires.

10. Students are to read aloud the instructions for each Decision Block.

V. Win Criteria.

The first student to get a bill passed wins the game.

I. Debriefing.

A. Debrief will vary and depend on whether the game is used to introduce the unit or is used during the unit.

B. The following general questions may be appropriate.

1. Do you think most bills have a good chance or a poor chance of becoming a law? Why?

2. List the steps a bill must take from its introduction to its passage. (Remember this game assumes all bills start in the house committee.)

3. Why do you think a bill's chances for success improve the further along it gets in the game?

4. What factors can affect a bill as it reaches:

    a. House committee

    b. House floor

    c. Senate committee

    d. Senate floor

    e. Joint committee

    f. House-Senate vote

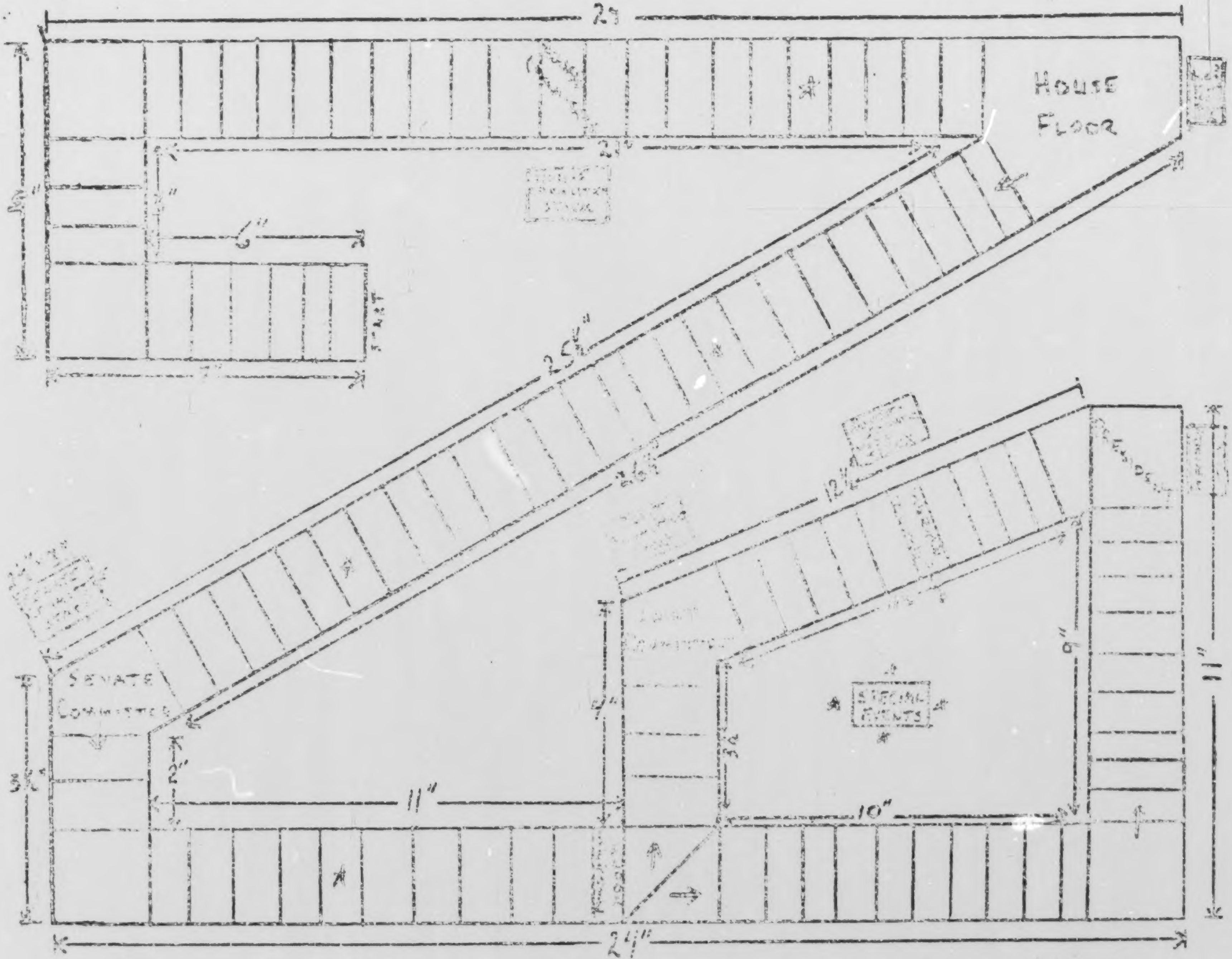
    g. President

5. What events can influence a bill other than major decision blocks?

6. In what way were you able to affect the success or failure of your bill?

II. Results of Tryout.

PASS-A-BILL


29
HOUSE FLOOR
21"
6"
7"
START
3"
25½"
26½"
12½"
SENATE COMMITTEE
JOINT COMMITTEE
SPECIAL EVENTS
9"
11"
10"
3½
4"
2"
3"
24"

All Blocks Are 1" Square with exception of House Floor, Senate Committee & Joint Committee

PICK-AN-END

I. Overview.

This board game teaches or reviews the short vowel sounds. It is designed for first and second grades. Students play as individuals in groups of four to six players. This game could also be played by slow learners in advanced grades.

A similar application of this game would be to change the format so that the beginning sounds are put on the playing boards and a vowel deck of cards is used instead of a beginning sound deck.

II. Objectives.

A. Behavioral.

1. Orally given the following list of 10 words containing short vowel sounds: apple, can, pet, men, igloo, pig, clock, chop, umbrella, cup, the child should be able to state correctly the vowel sound contained in eight of the 10. The child should be given one word at a time. His answer must be given within 10 seconds after hearing the word and before proceeding to the next word.
2. Orally given the following list of 10 words containing short vowel sounds: mat, tan, wet, hen, fig, sit, cot, top, tub, sun; the child should be able to spell and write correctly eight of the 10.
3. Given the following written list of five unfamiliar reading words containing short vowel sounds: bath, dent, finish, pod, mumps; the child should be able to read them aloud with 80% accuracy. The child should be given one minute per word. At the end of the minute, he must say his answer. He is given only one chance to read the word.
4. Given a sheet of paper containing the following form:

   1. ă ________
   2. ĕ ________
   3. ĭ ________
   4. ŏ ________
   5. ŭ ________

   the child should be able to give orally a word containing each vowel sound. No one may say the sounds for him. He is allowed one minute for each number. At the end of the minute he must give his answer

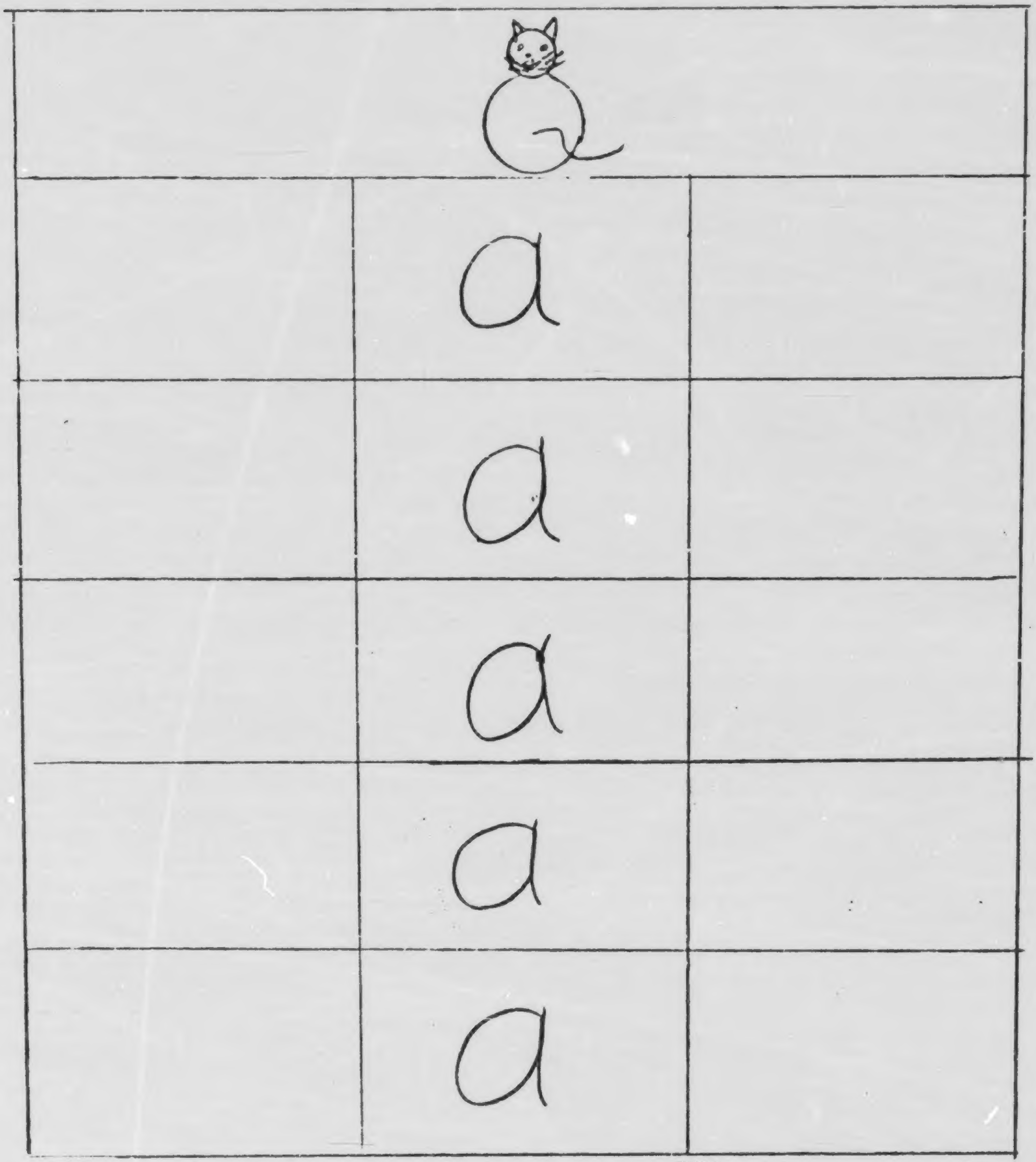
B. General.

Through learning vowel sounds, the child should improve his reading skills.

III Materials and Game Components.

A. Needed Materials (for one group of six children).
   1. Duplicating paper or construction paper (six sheets per child).
   2. Six duplicating masters.
   3. Two felt-tip markers (red, blue).
   4. Approximately 60 unruled index cards.

B. Construction of Game Components.
   1. Game board:
      a. Draw the following on duplicating masters (one/master).
         (1) ă



(2) ĕ : use a picture of a dress and replace the a's with e's.

(3) ĭ : use a picture of an igloo and replace the a's with i's.

(4) ŏ : use a picture of a top and replace the a's with o's.

(5) ŭ : use a picture of the sun and replace the a's with u's.

2. Establish a deck of 30 beginning sound cards. Letters are printed (one/ index card) in red. Use the following letters:
2 b's, 2 c's, 2 d's, 2 f's, 2 g's, 2 h's, j, k, l, 2 m's, n, p, qu, r, 2 s's, 2 t's, v, w, x, y, z.
3. Establish a deck of 30 cards containing ending sounds. These are printed in blue on index cards (one/ per card).
3 b's, 3 d's, 2 f's, 2 g's, h, l, m, 3 n's, 3 p's, 4 r's, 2 s's, 4 t's, w.

IV. Procedures.

A. Four to six children sit in a group.

B. Each child receives an identical playing board. (The group plays with only one sound at a time, *i.e.*, all play using the short a sound game board. Next time they may use short e, etc. They continue through the short vowels until they can play with a single board containing all of the sounds.)

Vowels		
	a	
	e	
	i	
	o	
	u	

C. Appoint one child as the dealer; he plays also. Each player is dealt five red cards (beginning sounds) which are placed in the left column of his board.

D. Player 1 draws the top card from the blue deck (ending sounds). If he can use the letter to complete a word, he puts it in the appropriate space on his board. If he cannot use the card, he lays it down, face up, by the deck.

E. The next child has a choice. He may either take the top card discarded by the previous player, or he may select the top card from the blue deck. If he can make a word, he places the card on the board. If he cannot, he discards it.

F. The game progresses in the same manner until one player has completed his board (five words).

V. Win Criteria.

The first player correctly completing his board of five words is the winner. He must be able to read the words he has formed.

VI. Debriefing.

A. The teacher may pose the following questions:

Winners.

1. Why do you think you were able to win?
2. What words did you form?
3. Spell them to us.
4. Use each word in a good sentence.

Losers.

1. What words were you able to make?
2. Why couldn't you fill your board with words?

General questions:

1. What vowel and vowel sounds were used in the game?
2. How many words containing this sound we can name? (List on the board.) Spell them to the teacher as you name them.
3. What clue picture can we remember for short a, e, i, o, u?

B. Test according to behavioral objectives.

VII. Results of Tryout.

PICK-A-LEAF

I. Overview.

This game reviews the whole initial alphabet. Although designed for grade 1, it can be adapted for use in grades one through three. The whole class can play at one time, divided into two teams, each with a leader.

The same game format could be used in English to teach dipthongs, digraphs, suffixes and prefixes, root words, and blends; it could also be used to teach numbers.

II. Objectives.

Behavioral.

1. Given each letter of the alphabet in random order, the child should be able to say its name.
2. Given each letter of the alphabet, the child should be able to say a word which begins with that letter.

III. Materials and Game Components.

A. Needed Materials.
   1. 2 sheets of white poster board.
   2. 52 hooks and eyes (picture hanging hooks are ideal).
   3. Scissors.
   4. 2 sheets of green cardboard.
   5. 1 black felt-tip marker; 1 brown felt-tip marker.
   6. 2 baskets.

B. Construction of Game Components.
   1. Trees:
      a. Construct two trees from poster board; these can be colored brown.
      b. Construct 52 leaf shapes from green cardboard.
      c. Affix 26 hooks to each tree. Affix one eye to each leaf.
      d. On each leaf, write a letter of the alphabet; each letter is written twice. Attach 26 leaves (containing each letter of the alphabet) to each tree.
   2. Baskets:
      Use the two baskets for teams to collect the leaves.

IV. Procedures.

A. Divide the class into two teams.

B. Choose a leader for each team (either teacher's choice, or begin with the register). This child is called a "tree trimmer."

C. Teams compete in turn, i. e., one child from team A begins, than one child from team B has a turn.

D. The first child walks to his team's tree and points to any letter which is hanging there. He pronounces the name of the letter, e. g., "That is B." He then says a word which begins with the letter, e. g., "Balloon begins with B."

E. If the child is correct, the leaf is given to him by the tree trimmer so that he may place it in his team's basket.

F. If the child is incorrect, any member from the opposing team may give a correct answer and gain the same leaf from his team's tree. The tree trimmer acts as judge. Only one try is allowed; if the second attempt is incorrect, the leaf is left hanging on the tree.

V. Win Criteria.

The team which first empties its entire tree wins. If the game is stalemated, the team with the most leaves wins.

VI. Debriefing.

A. The following questions may be appropriate:
   1. Ask the winning team:
      "Why do you think your team won?"
   2. Ask were there any letters for which you would have named more than one word? What were the letters and the words?
   3. "Let's review the letters." (Hold alphabet cards in front of the pupils and have them name the letters.)

B. Test according to the behavorial objectives.

VII. Results of Tryout.

PROGRESSIVE WORD RUMMY

I. Overview.

This card game teaches synonyms and promotes efficient use of the dictionary and thesaurus. Although designed for grades 4-6, it can be adapted for use in grades 7-9. Groups of two to four students can play.

The same format can be used to teach a range of classifications, from animals and transportation vehicles to biological categories or schools of art.

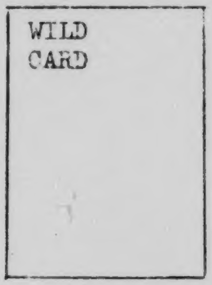
II. Objectives.

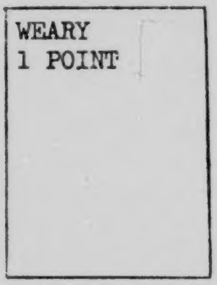
A. Behavioral.
   1. Given in random order the synonyms listed in section IV, A, written on index cards, one word per card, the student should be able to group the cards into 12 synonym sets of four words with the same core meaning.
   2. Given a word for which there are common synonyms and a thesaurus and dictionary, the student should be able to determine at least one synonym for the word given.

B. General.
   This game will give practice in dictionary and thesaurus use.

III. Materials and Game Components.

A. Deck of 52 cards, consisting of four wild cards, and 12 synonym sets made of four cards each.
   1. Cards are made of index cards. The word "wild," or the synonym and its number of points, are written in the upper left corner of the card, as shown.





   2. The synonym sets are made of the following words. The numbers indicate the number of points each card is worth.
      a. 1. Weary
         2. Tired
         3. Fatigued
         4. Exhausted

      b. 1. Dislike
         2. Hate
         3. Detest
         4. Loathe

      c. 1. Scorn
         2. Ridicule
         3. Derision
         4. Mockery

d. 1. Odd
   2. Queer
   3. Unusual
   4. Peculiar

e. 1. End
   2. Finish
   3. Complete
   4. Conclude

f. 1. Reveal
   2. Expose
   3. Disclose
   4. Divulge

g. 1. Little
   2. Small
   3. Tiny
   4. Minute

h. 1. Big
   2. Great
   3. Large
   4. Huge

i. 1. Walk
   2. Stroll
   3. Saunter
   4. Wander

j. 1. Yell
   2. Shout
   3. Shriek
   4. Scream

k. 1. Supply
   2. Furnish
   3. Provide
   4. Equip

l. 1. Want
   2. Wish
   3. Desire
   4. Crave

B. Pencil and paper for each team.

C. One to four dictionaries and thesauruses for each team.

IV. Procedures.

A. The cards are dealt, one at a time, to each team, until each team has 10 cards.

B. The remaining cards are placed face-down on the center of the table. To start the discard pile, the top card is turned face-up and placed beside the face-down cards.

C. The object of the game is to be the first to match all of one's cards into sets of synonymous words. Partners may discuss all moves with one another.

D. One player from the team which did not deal starts play. He either takes the face-up card or draws one from the top of the deck. He must then make a discard of one card from his team's hand by placing it face-up on the discard pile.

E. Before he makes his discard, however, a player may lay face-up on the table any synonym sets he and his partner wish to show. (A set consists of three or four cards which are synonyms.) If a team holds a wild card, it may use this card to make a set of three or four synonyms. If players do so, they must say aloud a word which is synonymous with the other two or three cards.

F. At any point, any player may challenge any synonyms used by the opposing team to form sets. If his challenge is successful, his team gains the number of points on the challenged card. Similarly, if his challenge is unsuccessful, he loses the number of points on the challenged card. The teacher or an impartial observer records the number of challenged points gained or lost.

G. Any player may use the dictionary or thesaurus at any time, provided that he does not interrupt the game.

H. When one team has placed all of its cards in sets of three cards, three cards, and four cards, and discarded; the game ends.

I. Scores are computed as follows:
   1. Teams receive points for successful challenges or lose points for unsuccessful ones.
   2. Teams receive the points listed on the cards they have laid down in sets.
   3. Teams lose the points listed on the cards they still hold in their hands.

V. Win Criteria.

The team with the highest score wins.

VI. Debriefing.

A. The following questions may be appropriate:
   1. What extra synonyms were given when wild cards were played? Can you think of more synonyms?
   2. Which was more useful, the dictionary or the thesaurus? For what different purposes are they likely to be useful?
   3. What words were challenged? Why?
   4. Let's review the synonym sets.

B. Test according to the behavioral objectives.

VII. Results of Tryout.

RE-CON

I. Overview.

A role-playing game for use in a high school social studies class, RE-CON involves the making of decisions that affect resources and conservation in a small mining town. It is a game in which the whole class can participate.

RE-CON is designed to illustrate a conflict. Other conflict situations can fit into the same general format.

II. Objectives.

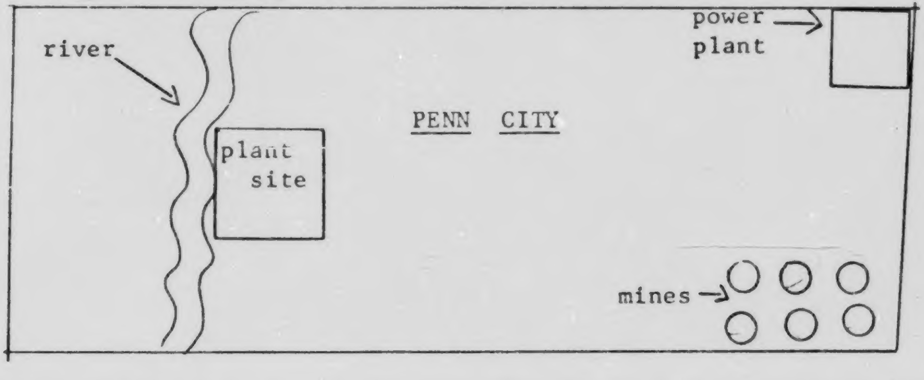
A. Behavioral.
  1. After playing the game once, and using no reference materials, the student should be able to list at least three facters involved in conservation. Possible factors include:
    a. clean streams
    b. car exhaust
    c. fertilizers
    d. clean air
    e. wildlife protection
    f. highway beautification
    g. rural sewers
    h. state game studies
    i. reforestation
    j. city planning
  2. The student should be able to list at least two ways in which development of natural resources could hinder conservation. (One evident in the game is: pollution of air and streams by an industry using coal.)
  3. Given a list of possible interest groups in a community
    a. Townspeople
    b. President of a Union
    c. Mayor (or council)
    d. Local Game Warden
    e. Doctor

  the student should be able to rearrange the list in order of influence.

B. General.
  1. The student should gain an understanding of the interaction of forces within a community during a time of decision-making.
  2. The student should learn to work together, making compromises, to arrive at solutions that will be beneficial to as many groups as possible.

III. Materials and Game Components.

A. Scenario for all participants (see Appendix A).
B. Roles for all participants (see Appendix B).
C. Map of Penn City Area, constructed as shown:



Appendix A

Scenario

Penn City is a depressed coal mining community that badly needs new industry. Two companies are interested in locating in the area, but both want the same favorable location along the river and will accept no other. The American Nylon Company will employ 100 local workers and will use coal in its operations. The American Laser Company will employ 50 local residents but has great potential for expansion in the immediate future. It uses electricity produced by a power plant in another community in its operations and will make no use of coal. Penn Township has good natural resources to offer industry. It has coal, electricity, and a clean river; the American Nylon Company, however, will be forced to dump waste chemicals into the river and has no means to prevent pollution of the air from its smoke stacks. The people of the community are asking themselves, "Which industry will be best for our community?"

Appendix B

Roles and Power

Fisherman

You are Marlin Troutman. Fishing is your most enjoyable pastime, but you are an unemployed miner. You have a son in college and expenses are piling up. You are undecided at this time.

Voting Power - 1 Point

President of Medical Association

You are Dr. Jonas Casey. You want to keep the community healthy, but you realize there is a need for employment. You want to hear both sides.

Voting Power - 2 Points

President of the American Nylon Corporation

Your name is Joe Smith. Your industry offers only immediate employment for the area. Mining will also be stimulated in the community by your use of coal. However, you cannot avoid the pollution of the Shamcarm River and the clean air of the Penn community. You must convince the other game participants that your industry is best for Penn Township. You will win the game if you convince the game participants that they should have your industry in their community.

Mine Owner

You are Henry Dominant, owner of the Penn Valley Mine. You desire to get your mine back to full-time production. You are well known in the community and proud of the contributions you have made to its growth. You are not too popular with your mine workers.

Voting Power - 5 Points

Townspeople

You are an undecided resident of the community. You want what is best for your town. You are aware of its problems concerning unemployment. Decide which industry will be best for your town after hearing all arguments.

Voting Power - 1 Point

Forest Ranger

You are Ken Woods, the conscientious local forest ranger. Your best allies in your job have been the local sportsmen and the few area farmers. You are sympathetic with the area's economic problems but want to do your job well.

Voting Power - 2 Points

President of the American Laser Company

Your name is "Rip" Lighting. You will bring a "clean" industry into the area and use electric power. Although you will employ only 50 workers initially, your company has great possibilities for expansion. You must convince the game participants that your industry is best for the Penn community. You will win the game if the participants vote for your company.

Game Warden

You are Vincent Stalker. You are interested in conserving wildlife and keeping clean streams. You see possibilities in visiting hunters and fishermen adding to the local economy.

Voting Power - 2 Points

President of the Rotary Club

You are Rudy Wheeler, a local store owner. Members of the Rotary Club to which you belong are mainly local businessmen. You feel that the local economy needs immediate help. You want to see as many unemployed men as possible in your community get back to work as soon as possible.

Voting Power - 5 Points

Women's Civic Club President

You are Mrs. Stout. Your husband is an unemployed mine foreman. You like the mining industry and feel that it can make a comeback. Many of your personal friends are connected with the mining industry. You want your club and the community to favor the American Nylon Company.

Voting Power - 5 Points

President of the Mine Workers Union

You are John L. Coalhead. The American Nylon Company will use coal in its operations and thereby help employment in the local mines. Thus, you favor the Nylon Company.

Voting Power - 8 Points

President of Local Sportsman Association

You are Fred Firearm. You feel that the community needs industry, but not at the expense of recreation. However, you want to hear both sides of any argument. You are a lineman for the local power company.

Voting Power - 5 Points

The Mayor

You are George Plunkett, the popular mayor of the city. You will conduct the town meeting and discussion of the possibility of a new industry coming to town. You are torn between your desire to maintain your political popularity and your own firm opinions on what is best for your community.

Voting Power - 10 Points

Water Company Official

You are Rocky Rivers. You want to keep the Shamcarm River clean because your company's water comes from the river. The people must know that pollution threatens the drinking water of the community.

Voting Power - 2 Points

Appendix C

VOTING SHEET

PLAYER	Predicted Vote on Company			Actual Vote on Company	
	ANC	ALC		ANC	ALC
George Plunkett, Mayor					
Rudy Wheeler, Rotary Club					
Vincent Stalker, Game Warden					
Mrs. V. Stout, Civic Club President					
Rocky Rivers, Water Co.					
Marlin Troutman, Fisherman					
Dr. Jonas Casey, Local A.M.A.					
John Coalhead, Miner's Union Association					
Fred Firearm, President Sportsman Association					
Ken Woods, Forest Ranger					
Townspeople (what majority will vote)					
Harry Dominant (mine owner)					

SPACE RACE

I. Overview

This combination board and role-play game (hybrid) teaches a large number of facts about out solar system and its planets. It is designed for all ability levels in the elementary and junior high games. Nine individuals or nine small teams can play.

II. Objectives

Behavioral.

1. The student should be able to write the names of the nine planets in our solar systems and place them in proper order as to distance from the sun.

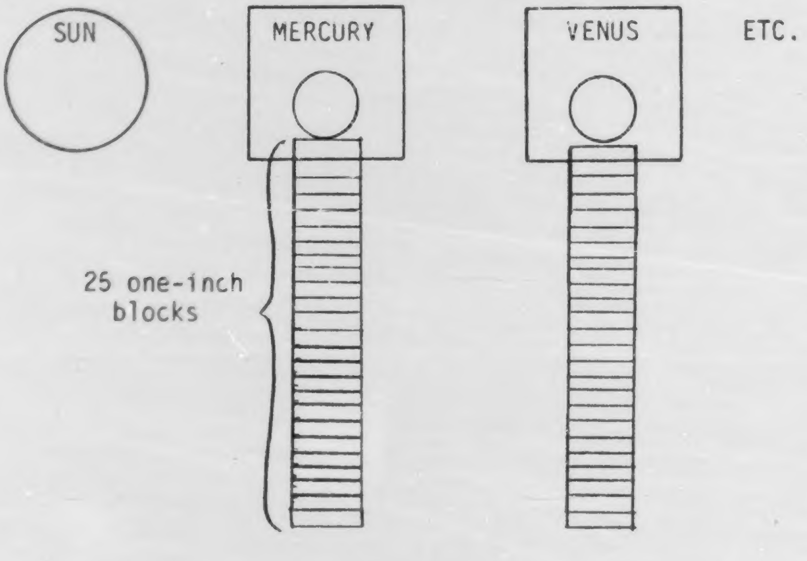
2. Given a list of characteristics of the nine planets of our solar system and the names of the nine planets, the student should be able to match at least 35 of the characteristics with the planets to which they belong.

3. The student should be able to write at least three hazards of space flight.

III. Materials and Game Components

A. Needed Materials.
   1. Plasti-Tak or masking tape
   2. Glue
   3. Components enclosed in this kit.

B. Construction of Game Components.
   1. Game Board:
      Construct the enclosed materials so that the finished product can be attached to a chalkboard, a bulletin board, or a large sheet of posterboard. (Materials need only to be cut apart and pasted together.)



2. Flight Plans:
   Simply cut flight plan sheets where indicated. There will be nine to the set--one for each planet.
3. Computer Cards:
   Cut apart the enclosed question sheets. Each item should be pasted to a heavy "computer card."
4. Space Vehicles:
   Cut out the nine space ships. Use Plasti-Tak or masking tape to attach each to a different space route on the game board.

IV Procedures

A. Show and describe the game board to the class.

B. Select either nine individuals or nine small teams for competition; give each individual or team a flight plan.

C. Tell players that a computer will program their flight and feed them information through a computer assistant (one student). The cards from the computer will determine their progress. If the computer gives them information that appears on their flight plan, they are to identify their planet as having the characteristic mentioned and then move ahead on the game board. The computer cards contain the number of moves which should be made.

D. The game begins with the computer assistant removing one card from the computer. As he obtains a card, he reads it aloud to all teams so that each can check its flight plan to see if its planet has the characteristic which has just been read.

E. This process is repeated until a team or individual has reached its destination.

F. It is suggested that the game be re-played on different days so that students have a chance to travel to each planet.

V Win Criteria

The team or individual to reach its destination first is the winner.

VI. Debriefing

A. The following questions may be appropriate:
   1. What planets were we trying to reach in the game?
   2. What are the characteristics of Mars (and each of the other planets) that we hear in the game?
   3. Other specific questions about planets deemed important by the teacher.

B. Test according to the behavioral objectives. (Also, see sample test, Appendix D.)

SAMPLE TEST

I List the planets in their correct order from the sun.

1 ____________
2 ____________
3 ____________
4 ____________
5. ____________
6. ____________
7. ____________
8. ____________
9 ____________

II Write the name of the planet that best finishes each statement.

1 The coldest planet in the Universe is ____________.
2 The planet that takes 24 hours to revolve on its axis is ____________.
3 The Earth's sister planet is ____________.
4 The planet named after the Roman God of War is ____________.
5 The largest of the planets is ____________.
6 The planet nearest the sun is ____________.
7 The planet that shines the most brightly is ____________.
8 The planet circled by rings of ice crystals and dust is ____________.
9 The planet that appears at times to be a reddish color is ____________.
10 The planet with 12 moons is ____________.

III In the blank write the letter of the planet that best finishes each statement

1. The darkest of all the planets is probably
a. Mercury b. Pluto c. Mars d. Earth ____

2 Its two moons don't give much light to
a Venus b Jupiter c. Neptune d. Mars ____

3 The large planet that rolls on its side is
a Uranus b. Pluto c. Earth d. Venus ____

4 The smallest and fastest planet is
a. Jupiter b Uranus c. Saturn d. Mercury ____

5 The only planet that seems to have enough oxygen for life as we know it is
a Venus b Neptune c. Earth d. Pluto ____

6. The planet named after the chief of the Roman Gods is

a. Jupiter b. Mars c. Mercury d. Pluto _____

7. Usually the first "star" you see in the evening is

a. Mars b. Uranus c. Mercury d. Venus _____

8. The planet that comes closest to the Earth is

a. Saturn b. Mars c. Mercury d. Neptune _____

9. Scientists once thought they saw canals on

a. Saturn b. Pluto c. Mars d. Jupiter _____

10. The planet about which we know the most is

a. Neptune b. Earth c. Venus d. Pluto _____

11. Thick clouds cover the lovely planet

a. Mars b. Saturn c. Mercury d. Venus _____

12. The planet with just one moon is

a. Jupiter b. Venus c. Neptune d. Earth _____

13. Some form of plant life may exist on

a. Mercury b. Mars c. Pluto d. Neptune _____

14. The planet that is covered mostly by water is

a. Venus b. Mercury c. Earth d. Mars _____

ANSWER SHEET

I.

1. Mercury
2. Venus
3. Earth
4. Mars
5. Jupiter
6. Saturn
7. Uranus
8. Neptune
9. Pluto

II.

1. Pluto
2. Earth
3. Venus
4. Mars
5. Jupiter
6. Mercury
7. Venus
8. Saturn
9. Mars
10. Saturn

III.

1. b
2. c
3. a
4. d
5. c
6. a
7. d
8. b
9. c
10. b
11. d
12. d
13. b
14. c

SPEC-CAT
(SPECIMENS AND CATEGORIES)

I. Overview.

This board game, to be used on a field trip, acquaints students with the characteristics of botanical specimens and with the categories to which these specimens belong. It was designed for ninth grade general science classes, but is easily adaptable to other grade levels. Teams of four students can play.

The same format can be used to teach the identification and classification of almost any available objects.

II. Objectives.

A. Behavioral.

Several botanical specimens are used to play this game and are listed, along with their classifications, on the included chart. The behavioral objectives as stated below pertain to these specimens only; however, it should be noted that they may be varied depending upon the participants and the occasion. Thus the specific objectives should be revised by the teacher to fit the game being played.

1. Given the following 25 specimens, the child should be able to identify any 15 of them by name:

Onion
Sourgrass
Grass
Timothy
Rye
Plantain
Wild Strawberry
Clover
Thistle
Daisy
Moss
Ferns
Toadstool
Algae
Liverworts
Arborvitae
Yew
Blue Spruce
White Pine
Juniper
Box Elder
Oak
Maple
Elm
Apple

2. Given a multiple choice test of 25 items including all specimens and of the following form:

(1) Algae: (Specimen)

(a) Monocots

(b) Thallophytes (Category)

(c) Angiosperms

the child should be able to answer 20 items correctly.

B. General.

After playing the game, the child should be able to observe that many small parts constitute the whole of nature.

MONOCOTS	DICOTS	THALLOPHYTES	GYMNOSPERMS	ANGIOSPERMS
ONION	PLANTAIN	MOSS	ARBORVITAE	BOX ELDER
SOURGRASS	WILD STRAWBERRY	FERNS	YEW	OAK
GRASS	CLOVER	TOADSTOOL	BLUE SPRUCE	MAPLE
TIMOTHY	THISTLE	ALGAE	WHITE PINE	ELM
RYE	DAISY	LIVERWORTS	JUNIPER	APPLE

III. Materials and Game Components.

- A. A defined geographic area.
- B. A Bingo-type board or duplicated sheet for each player. This board contains names of plant specimens that are to be found by players. The specimens are listed vertically under the categories to which they belong and are accompanied by a picture. Specimens which are difficult to find should be placed as indicated below. The board should be designed as follows:

Difficult				Difficult
	Difficult		Difficult	
		RARE		
	Difficult		Difficult	
Difficult				Difficult

names of categories

specimen names and pictures

A sample board is included.

C. Containers in which each team can place their collected plant specimens while on the field trip.

IV. Procedures.

A. Teacher must survey the given geographic area before the game is played in order to see what specimens are available; then he can establish the playing boards.

B. Teams of four (can be varied) are chosen; each player on a team receives a board.

C. Teams are sent with their boards into the defined area to select specimens; players on a team may either stay together or separate unless otherwise directed by the teacher.

D. After a time period specified by the teacher, teams return to the classroom and match specimens to the board examples.

E. Score is calculated.

V. Win Criteria.

The team with the highest score wins the game.

Scoring:

2 points - each block covered
10 points - each horizontal line
15 points - four corners
20 points - each vertical line
50 points - each diagonal line
50 points - center square
365 points - total for all squares covered

VI. Debriefing.

A. The following questions may be appropriate:

1. Ask the winning team why they think they won. Did they try to use strategy? (i.e., searching as individuals or staying together).

2. Ask the losing team why they think they lost (i.e., not being able to find the specimens, not having enough time, etc.). What would they do to improve their score on the next trip?

3. Ask questions regarding recognition of specimens. Example: How did you know that this is a fern?

4. Ask questions relating to the biosphere. Example: Where did you find the fern? What was near it? Was the area dry or moist?

5. Ask teams why they were unable to find certain specimens. The conclusion might be that the specimen was rare.

6. Ask what makes a specimen rare.

B. Test according to the behavioral objectives.

VII. Results of Tryout.

SPINOBLEND

I. Overview

Designed for second grade students SPINOBLEND provides drill on the auditory-visual recognition of 10 consonant blends and aims at the formation of an instant association of a blend with a given word and phrase. Groups of 10 students may play.

It can easily be adapted to other grade levels. By constructing new cards, the teacher can use the game in other areas of phonics, such as drill on vowel sounds or digraphs as well as on consonant blends.

II. Objectives.

A. Behavioral.

1. Given a list of 50 vocabulary words found in the game (see section IV), the student should be able to read aloud in an oral test 30 of the 50 words. He will be given a maximum of 3 seconds to read each word.
2. Given the 10 consonant blends found in section IV of the game (fr, fl, [illegible], [illegible], dr, gr, sl, br, st, tr), the child should be able to list five words for each of the consonant blends. He may write any of the words found on the Word Cards in SPINOBLEND (see section IV). The lower limits of acceptable performance will be 40 correct responses in a 20 minute period.
3. Given 25 phrases or sentences and 25 word endings found in the game (see Appendix A), the student should be able to write the consonant blend which can be associated with the phrase or word. The lower level of acceptable performance will be 19 correct responses in a 25 minute period.
4. Given the 10 blends on SPINOBLEND, the student should be able to construct and write one new word containing each blend. (No credit will be given for words found in SPINOBLEND.) The lower level of acceptable performance will be seven correct responses in a 15 minute period.
5. Using the word cards employed in the game, the student should be able to match correctly the word cards which contain an initial consonant blend with the meaning on the phrase cards, in section IV, B, 3, 6.

B. General.

- The behavioral objectives listed above, if achieved, should accelerate learning to read.

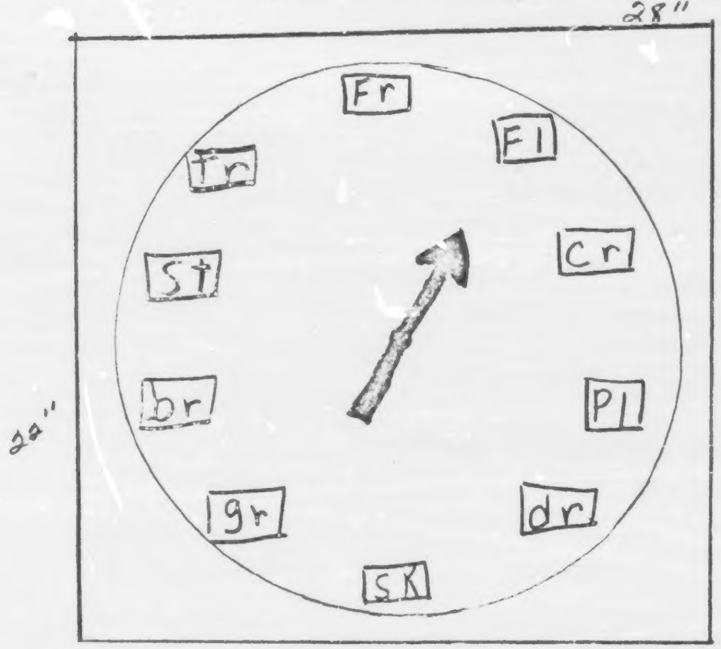
III Materials and Game Components

A. Needed Materials.

1. 110 index cards (3" X 5").
2. 2 sheets of green (or any color except white) construction paper.
3. 1 sheet of white poster board (22" X 28").
4. 1 felt-tip marker (black).

B. Construction of Game Components.

1. Spinner:
   a. Make a circle 21" in diameter on the large sheet of white poster board.
   b. Divide the circle into tenths.
   c. Place the consonant blends (fr, fl, cr, pl, dr, sk, gr, br, st, tr) on green construction paper (3" X 3"), and station them equi-distant on the perimeter of the circle.
   d. Construct a spinner and place it in the center of the circle (see the following illustration).



2. Word cards:
   Print each of the following 50 words on a separate 3" X 5" index card:

track
tray
train
truck
trick

bride
bridge
brick
broom
brown

ground
grin
green
grape
grow

frost
frog
frame
Frank
Friday

flag
flowers
fly
floor
fleas

stop
stars
sting
stamp
stove

drum
dress
dream
draw
dry

crow
crayon
crate
cry
cross

skip
skunk
sky
skirt
skate

please
play
plant
plum
plate

3. Phrase cards:
   a. Print each of the following sentences or phrases on separate 3" X 5" index cards.
   b. On the reverse side of the card, lable each card as to whether it belongs in set I, II, III, etc. You will have 10 sets. (Do not place any answers on these phrase cards.)

Set (1) (tr blend)

		Answers
(a)	A train runs on it.	track
(b)	You carry dishes on it.	tray
(c)	It goes on a track.	train
(d)	You can ride on it.	truck
(e)	My dog can do it.	trick

Set (2) (br blend)

(a)	A woman who is going to be married.	bride
(b)	It is built over water.	bridge
(c)	Houses are built of this.	brick
(d)	It is something Mother uses to sweep the floor.	broom
(e)	It is a color.	brown

Set (3) (gr blend)

(a)	You walk on this.	ground
(b)	A smiling face does this.	grin
(c)	It is a color.	green
(d)	It is something to eat.	grape
(e)	The plants in your garden do this.	grow

Set (4) (fr blend)

(a)	It is on the windows on a very cold morning.	frost
(b)	It hops near the pond .	frog
(c)	You put a picture in it.	frame
(d)	It is a boy's name.	Frank
(e)	It is a day of the week.	Friday

Set (5) (fl blend)

(a)	It is red, white, and blue.	flag
(b)	They bloom in the summer.	flowers
(c)	A plane does this.	fly
(d)	Your mother can scrub this.	floor
(e)	Dogs sometimes get these.	fleas

Set (6) (st blend)

(a)	You do this at a red light.	stop
(b)	They can be seen at night.	stars
(c)	A bee can do it.	sting
(d)	You put it on a letter.	stamp
(e)	Mother cooks on it.	stove

Set (7) (dr blend)

(a)	A toy which you can beat.	drum
(b)	A girl wears this.	dress
(c)	You do this when you sleep.	dream
(d)	You do this in art class.	draw
(e)	Opposite of wet.	dry

Set (8) (cr blend)

(a)	A black bird.	crow
(b)	You color with it.	crayon
(c)	A big box.	crate
(d)	A baby does this.	cry
(e)	What you see on a church.	cross

Set (9) (sk blend)

(a)	Between a walk and a run.	skip
(b)	It is an animal and smells when you scare it.	skunk
(c)	You see stars in it at night.	sky
(d)	A girl wears it with a blouse.	skirt
(e)	You do this on ice.	skate

Set (10)(pl blend)

(a)	A polite word.	please
(b)	We do this after school.	play
(c)	It grows in the garden.	plant
(d)	It is a fruit.	plum
(e)	Mother puts your food on this.	plate

4. Identity cards:

   a. Fold 10 index cards in half.
   b. Print one of the following blends on each of the folded index cards: tr, br, gr, fl, fr, st, dr, cr, sk, pl.

IV. Procedures.

A. Sort the 50 sentence or phrase cards into 10 sets of five cards each. Check the reverse side of the sentence cards as to which set each belongs. Place each of the folded identity blend cards near the set which corresponds to the blend.

B. You may have as many as 10 players. Deal each player five of the word cards. (If you have fewer than 10 players, each person will receive more word cards.)

C. The first player spins the SPINOBLEND and says the sound of the blend which is closest to the pointed end of the spinner. He looks over the identity blend cards until he sees the blend which he has pronounced. He then selects one of the sentence cards and reads it.

D. Each child locks over the word cards which he has in his hand, trying to find the word which can be associated with the sentence or phrase card and the blend. If he has the word card in his hand, he reads the word and places the card near him on the table.

E. If a player has the correct word card in his hand and fails to identify it, he keeps the card in his hand. The game continues until one of the players has placed all of his word cards on the table.

. Win Criteria.

The first child to place all of his word cards on the table wins. Lesser winners can be determined by counting the cards remaining in the other children's hands; the fewer the better.

I. Debriefing.

A. The following questions may be appropriate:

1. Why do you think you won the game?
2. Which of the consonant blends seemed difficult for you?
3. Did you have difficulty reading any of the words in the sentences? If so, which ones?
4. What other words can you think of that begin with these sounds?
5. How did we learn new words today?
6. How are all these words alike?
7. What did we find in this game that will help us attack other new words?
8. What other blends, phrases, and word cards can we add to this game?

B. Test according to the behavioral objectives.

II. Results of Tryout.

Appendix A.

1. It is a color. _____een
2. It hops near the pond. _____og
3. It is the day of a week. _____iday
4. It is red, white, and blue. _____ag
5. Your mother can scrub this. _____oor
6. A bee can do this. _____ing
7. A girl wears this. _____ess
8. A toy which you can beat. _____um
9. Mother cooks on it. _____ove.
10. They bloom in the summer. _____owers.
11. Opposite of wet. _____y
12. A black bird. _____ow
13. It is an animal and smells when you scare it. _____unk
14. You do this on ice. _____ate
15. It is a fruit. _____um
16. You do this in art class. _____aw
17. We do this after school. _____ay
18. Dogs sometimes get these. _____eas
19. It is a fruit. _____ape
20. It is built over water. _____idge
21. A big box. _____ate
22. It grows in the garden. _____ant
23. It goes on a track. _____ain
24. A train runs on it. _____ack
25. It is something Mother uses to sweep the floor. _____oom

SPINGBLEND

Pre-Test   Name ______________________

Part 1 Complete the answer to each riddle by writing the missing blend.

1. It is a color. ______een
2. hops near the pond. ______og
3. It is the day of a week ______iday
4. It is red, white, and blue. ______ag
5. Your mother can scrub this. ______oor
6. A bee can do this ______ing
7. A girl wears this. ______ess
8. A toy which you can beat. ______um
9. Mother cooks on it. ______ove
10. They bloom in the summer. ______owers
11. Opposite of wet! ______y
12. A black bird. ______ow
13. It is an animal and smells when you scare it. ______unk
14. You do this on ice. ______ate
15. It is a fruit. ______um
16. You do this in art class. ______aw
17. We do this after school. ______ay
18. Dogs sometimes get these. ______eas
19. It is a fruit. ______ape
20. It is built over water. ______idge
21. A big box. ______ate
22. It grows in the garden. ______ant
23. It goes on a track. ______ain
24. A train runs on it. ______ack
25. It is something Mother uses to sweep the floor. ______oom

Part 2. For each blend below write 5 words which begin with that blend.

pl

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________

br

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________

tr

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________

fr

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________

gr

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________

SPINOBLEND

Post-Test

Name ______________________

Part 1. For each blend below write 5 words which begin with that blend.

fl

1. ______________
2. ______________
3. ______________
4. ______________
5. ______________

cr

1. ______________
2. ______________
3. ______________
4. ______________
5. ______________

sk

1. ______________
2. ______________
3. ______________
4. ______________
5. ______________

dr

1. ______________
2. ______________
3. ______________
4. ______________
5. ______________

st

1. ______________
2. ______________
3. ______________
4. ______________
5. ______________

Part 2. Complete the answer to each riddle by writing the missing blend.

1. Mother puts your food on this. ___ate
2. You do this on paper. ___aw
3. You see stars in it at night. ___y
4. You color with it. ___ayon
5. An elephant has a long ____. ___unk
6. It is a color. ___own
7. You can ride on it. ___ain
8. If you water a plant, it will help it ____ ___ow
9. At home you walk on a ___. ___oor
10. They are in the garden. ___owers
11. You put a picture in it. ___ame
12. Another word for road. ___reet
13. They can be seen at night. ___ars
14. A kind word. ___ease
15. A baby does this. ___y
16. An animal that smells when you scare it. ___unk
17. You eat this meal before you come to school. ___eakfast
18. It is purple and good to eat. ___ape
19. It is a boy's name. ___ank
20. It is white and used to make a cake. ___our
21. A bird does this. ___y
22. You put it on a letter. ___amp
23. If a baby cannot walk, it ____. ___awls
24. You do this on ice. ___ate
25. A girl wears this. ___ess

STAY OR GO

I. Overview.

STAY OR GO is a role-play game designed to be used in a unit study of the Middle Ages. Its setting is a fictitious feudal manor whose village of serfs is subjected to forces of change and to other influences which try to maintain the status quo. The basic issue of the game is whether or not the serfs will choose to leave the manor, as this issue is explored, the social, political, and economic conditions of the Middle Ages are made apparent. A game which involves the whole class, STAY OR GO is recommended for junior high school grades because of its context.

By rewriting the scenario and roles, the teacher could adapt this game for the study of slavery in the South prior to the Civil War.

II. Objectives.

A. Behavioral.

1. The student should be able to list all the social classes that were involved in the game. These are apparent in the various roles (see Appendix B) and are summarized in Appendix E.
2. Given a list of all the participants in the game (see section IV, B), the student should be able to circle correctly those which did not favor change.
3. The student should be able to list correctly the three new factors in history which influenced the villagers' decisions in the game. These are contained in the roles (see Appendix B) and include the growth of towns and trade, the crusades, and the plague.
4. Given a list of the characteristics of the different social groups in the game, and the names of these groups, the student should be able to match each characteristic with the proper class or group. (These characteristics appear in the roles in Appendix B and are summarized in Appendix E.)
5. Given a list of the individuals involved in the game (see section IV, B), the student should be able to rank them in the order of their power or influence (see Appendix B for voting powers).

B. General.

1. The student should gain a better understanding of the structure of life on a medieval manor.
2. The student should recognize the historical factors which helped bring an end to feudalism.
3. The student should better understand the economic, political, and social aspects of feudalism.

III. Materials and Game Components.

A. A scenario setting the historical scene (see Appendix A) for each player.

B. Individual roles for the following (see Appendix B):

1. Sir Giles, Lord of the manor and vassal to the King.
2. The Senechal, business manager and overseer for the Lord.
3. The Miller, a freeman.
4. The Blacksmith, a freeman.
5. Father Barney, the village priest.
6. The Troubador, a traveling minstrel.
7. Roger Watkins, a serf returned from a Crusade.
8. Richard of Shrewsbury, a town resident who was once a serf.
9. William Teakwood, a runaway serf who returns to the manor.
10. Sir Cederick, the son of Sir Giles.
11. Sir Lunchalot, a knight of Sir Giles.
12. Sir Castlebury, a knight of Sir Giles.
13. Cyrus Moneybags, a prosperous town merchant.

C. Group roles for the villagers. There are three groups of villagers, eight students in each (see Appendix C). Each group contains:
   1. Casper, a conservative serf.
   2. Murphy, a radical serf.
   3. Six serfs whose opinions are neutral and who are to be influenced by the interaction of the game's players. (More or fewer players may be given roles as neutral serfs depending on the size of the class.

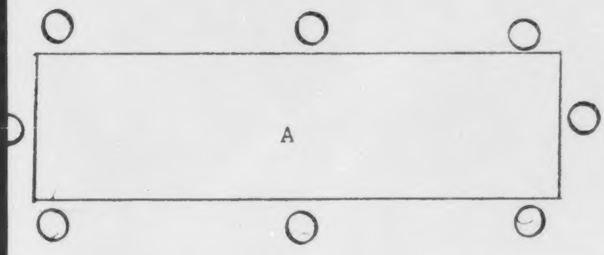
D. A transparency of the physical layout of the manor of Sir Giles to be shown to the class before the game begins. A textbook diagram of a typical medieval manor can be used to construct this.

E. Name cards to be worn by role players. (These can be made with index cards and straight pins.)

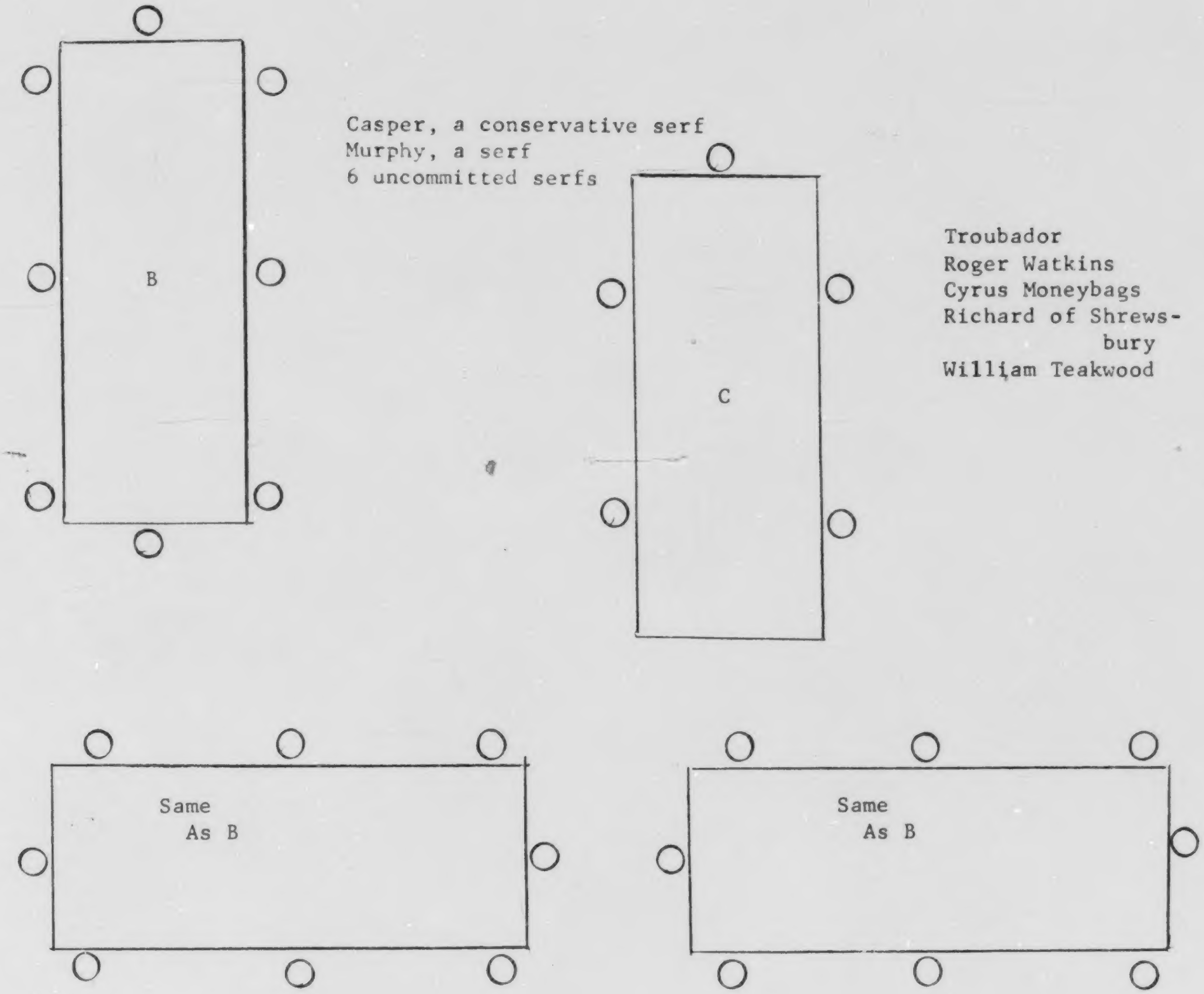
F. A prediction form (see Appendix D) for each player.

V. Procedures.

A. Time Period 1:
   1. Show transparency of manor and discuss.
   2. Give each player a scenario and allow time for him to read it.
   3. Assign roles, hand out name cards, and allow time for students to read their roles.
   4. Arrange the classroom as indicated below:



Sir Giles
Senechal
Village Priest
Blacksmith
Miller
Sir Cederick
Sir Lunchalot
Sir Castlebury


B
Casper, a conservative serf
Murphy, a serf
6 uncommitted serfs
C
Troubador
Roger Watkins
Cyrus Moneybags
Richard of Shrewsbury
William Teakwood
Same As B
Same As B

B. Time Period 2:
The five groups remain seated at their own tables and state their points of view, ask questions, and interact.

C. Time Period 3:
1. Divide the role players at tables "A" and "C" into three approximately equal groups and send one group to each of the three tables of serfs.
2. Have the role players from tables "A" and "C" interact with the serfs for a specified period of time (approximately 10 minutes); then have them rotate to another table of serfs for interaction. After a third rotation, the serfs will have been in contact with all the other participants in the game.
3. Players fill out their prediction forms. They orally state their votes to stay or go, which are tallied by the teacher, and check their predictions of others' votes. (The prediction form is used to indicate the extent to which students have been successful in communicating their opinions on issues and to give them a chance to guess the outcome of the game. Although they are not designated as winners, correct predictors should receive some satisfaction at having predicted accurately.)

V. Win Criteria.

Individuals win if the vote of the villagers favors their point of view.

VI. Debriefing.

A. The following questions may be appropriate:
   1. What factors or new ideas influenced your decision or caused change? How? Why?
   2. What social classes were present in the game?
   3. Which individuals (or groups) had the most influence?
   4. Which individuals (or groups) favored change? Which did not?
   5. Which serf would you consider radical? Conservative? Why?

B. Test according to the behavioral objectives.

VII. Results of Tryout.

Appendix A

Scenario

It is the year 1300 A. D. The scene is the manor of Sir Giles of Oakmont, somewhere in Europe. On this manor live the family of Sir Giles, his private army of knights, some craftsmen who are freemen, a local priest, and a village of serfs consisting of approximately 50 families.

Land changes hands often in these medieval times, and there is much warfare and confusion. Sir Giles' soldiers protect the manor and the people on it in return for their services. The nobility live much better than the serfs, who have little freedom and live under many restrictions. Sir Giles is not sympathetic with his serfs' lowly position and poor living conditions; he sees them only as a means of making his land produce.

However, changes are coming to Europe because of new historical, social, and economic developments.

Appendix B

Individual Roles

Sir Giles

You are Sir Giles, Lord of Oakmont Manor and one of the most powerful nobles of the kingdom of Frabri. Your income depends upon the agricultural products harvested on your land; you therefore need the labor of the serfs in order to keep your position. You will do anything in your power to keep things the way they are on the manor. You have heard rumors that there is talk in the village about the possibility of your serfs deserting the manor.

Voting Power- 15*

*Note: Voting powers may need to be revised as game goes through tryout.

The Senechal

You are Robert, the senechal of Oakmont Manor. As such, you are caretaker of the estate of Sir Giles. You see to it that his projects are carried out and act as a "go between"or mediator between the lord and the serfs. You are paid well and live comfortably. You do feel, however, that the serfs should be treated better by Sir Giles--you have heard a rumor that the serfs may leave the manor and go to a nearby town. You can understand why they might want to do this, but you also feel some loyalty to Sir Giles.

Voting Power- 8

The Miller

You are John the Miller. You are in charge of the lord's mill which grinds grain to flour. Everyone on the manor must use this mill, and, as a fee, they give part of their flour to the lord. Because you also receive a share, you firmly support Sir Giles. If the serfs should leave, you might not have a job!

Voting Power- 3

The Blacksmith

You are Henry the Blacksmith. You are a freeman, but you do smithy work for both serfs and nobles. Since you were once a serf, you want to see them lead a better life. You feel that they should be allowed to choose their own work and go to town to seek employment if they wish. You feel that if Sir Giles paid them good wages and treated them better, they might want to stay. However, you do not want Sir Giles to know you feel this way. You are undecided as to whether the serfs should risk leaving the manor.

Voting Power- 3

Father Barney, the village priest

You are Father Barney, the village priest. Although you minister to the spiritual needs of both nobles and serfs, you consider the serfs "your people." You feel that if the Lord of the manor, Sir Giles, would treat the serfs better, he would not have to worry about their leaving. You will try to convince everyone that the serfs must be given more freedom and better working conditions.

You also know that a disease known as the "Black Death" or plague has struck many towns and manors creating a shortage of workers. This should give the serfs a chance to demand better conditions, more pay, and more liberties. You will have to decide whether the serfs should leave or not.

Voting Power- 8

Troubador

You are a wandering troubador. As such, you have seen life on other manors and in the towns, and you are aware that changes are taking place. You know that an increase in trade brought on by the Crusades has caused towns to grow. You have seen that people now have more freedom in the towns. Also you have noticed that many serfs have escaped to the towns and have found a new and better life there. On some of the manors you have visited, the Lords are treating the serfs much better than Sir Giles is treating them at Oakmont. You will try to convince those you talk to that changes are bound to come. You are sympathetic towards the serfs; but you must be careful that you do not offend the nobles or you will be forced to leave Oakmont Manor.

Voting Power- 4

Roger Watkins, a serf
recently returned from a crusade

You have, on your journeys, seen many new and marvelous things. You are now aware that many men do not live in the way that your fellow villagers do on Oakmont Manor. You do not wish to resume your old way of life and are seriously considering leaving the manor to go to a nearby town if you can convince others to go with you.

Voting Power- 4

Richard of Shrewsbury
(a nearby town)

You are Richard of Shrewsbury, a former serf of Oakmont Manor. Having run away and successfully remained hidden for a year and a day, you are now a freeman! You are employed as a journeyman in a tailor shop and since you are paid good wages, you someday hope to own your own shop. You have come to Oakmont to visit your family. You will try to influence them and the other serfs to return with you to Shrewsbury.

Voting Power- 4

William Teakwood, a runaway serf who has returned to the manor

You are William Teakwood. Three months ago you ran away from Oakmont Manor. On your way to town, you were set upon by thieves and beaten and robbed. When you finally reached the town, you were unable to find work since you didn't have any particular skill. Without food or shelter, you went to another manor only to find that the serfs there were treated even worse than you had been at Oakmont. You are convinced that to leave the safety and security of Oakmont Manor again would be a foolish mistake. You will try to convince others of this.

Voting Power- 4

Sir Cederick, the son of Sir Giles

You are the son of Sir Giles. You and your father have many arguments, and you fear that he will never allow you to inherit the manor. You have already convinced some of the nobles to support you. If the serfs revolt, you can use this as an indication of your father's failure to rule properly. With this as an excuse, you could then take over the manor.

Voting Power- 10

Sir Lunchalot, a knight Who serves Sir Giles

You are Sir Lunchalot. Sir Giles has promised you a large grant of land in return for your faithful service. You do not want the serfs to leave the manor, since your fortunes are closely connected with those of Sir Giles. You will try to convince others that to leave the manor would be foolish since they would only be placing themselves in danger of starvation and death. You will ask questions like:

1. Suppose there are no jobs in town?
2. Who will protect you if you are attacked?
3. Where will you find food and shelter?

Voting Power- 9

Sir Castlebury, a knight serving Sir Giles

You serve in Sir Giles' army, but you dislike him because he shows more consideration for the other knights. You wish that Sir Cederick, the son of Sir Giles, were the Lord of the manor since he favors you and would probaby grant you some land. You wish that the serfs would give Sir Giles trouble, for this would give Sir Cederick an excuse to take over the manor. Without allowing Sir Giles to know how you feel, you will try to encourage the villagers to revolt telling them:

1. That serfs are treated better on other manors.
2. That there is a better life to be found in the towns.

Voting Power- 9

Cyrus Moneybags, a prosperous town merchant

You are Cyrus Moneybags, a prosperous merchant from the town of Shrewsbury visiting Oakmont Manor in order to see your old friend , Father Barney. You will give the following information to the people to whom you talk during your visit:

1. That business in the towns is good.
2. That returning crusaders have brought back new products such as silks and spices that people now want.
3. That the "Black Death" recently struck your town creating a need for more workers in the shops.
4. That the lords of some manors are giving their serfs better wages so that they won't go to find jobs in town.
5. That townspeople have gotten "charters" from the lords and now run their own town governments.

Voting Power- 6

Appendix C

Serfs' Roles

Casper, a serf

You are a conservative serf; you fear that change may cause you much trouble. You prefer the safety and security of life on Sir Giles' manor to the uncertainty of running away. You have heard rumors that the nobles will kill any runaway serf on sight. Having no particular skill other than farming, you fear you will find no job in town. You are also certain that travel is dangerous due to raids by groups of bandits. You will try to encourage others not to leave the manor.

Voting Power- 4

Murphy, a serf

You are a radical serf. You believe that life on the manor is unbearable and that the only possible solution for the village's problems is for all the serfs to leave the manor. You feel that your freedom is even more important than safety, food, or shelter, and you speak out in spite of the possibility of punishment by Sir Giles. You will try to convince the other serfs that leaving the manor is necessary.

Voting Power- 4

Undecided Serfs

You are confused and do not know whether you want to leave the manor or not. Listen to the arguments of all the people with whom you come into contact so that you can make a wise decision.

Voting Power- 2

Appendix D

Prediction Form

Predictions

Sir Giles
Sir Cederick
The Senechal
Sir Lunchalot (a knight)
Sir Castlebury (a knight)
Cyrus Moneybags (a merchant)
Father Barney (a priest)
Casper (a conservative serf)

Murphy (a radical serf)
William Teakwood (a runaway serf who returned)
Richard of Shrewsbury (a former serf residing in town)
Roger Watkins (a serf returned from a Crusade)
The Troubador
The Blacksmith
The Miller
The Undecided Villagers (majority)

Were you able to predict by your fellow students' actions during the game how they would vote on the issue?

Appendix E

Social Classes Involved in the Game

Nobility: The landowning, ruling class; supporters of the status quo.

Knights: Honored and affluent class, given gifts and benefits in return for service to and protection of a Lord.

Craftsmen: Freemen; dependent on the nobility and the villagers for their livelihood; have a special trade or perform services.

Rising Middle Class: Freemen in towns becoming prosperous as trade increases; frequently commercial or mercantile.

Priesthood: Influential and respected in village community; minister to the spiritual needs of both nobles and serfs.

Serfs: Members of the servile feudal class, bound to the soil and subject to the will of the nobility owning them.

STUMP THE STARS

TOPIC: The Colonization of Pennsylvania.

I. Overview.

This is one of a series of games which is designed to test the students' comprehension of Colonial Pennsylvania. It indicates the students' knowledge on various topics, e.g., colonial leaders, significant events of that era. This game also promotes the students' ability to formulate intelligible questions. "The Colonization of Pennsylvania" was designed for grades five and six and can be used with 10-30 children.

This same format can be used in English, math and science. It could be adapted for use in grades 3-12, depending on the complexity of the subject matter. The format of STUMP THE STARS could be used to determine how much students already know about a specific topic before studying it so a minimal amount of re-teaching would take place.

II. Objectives.

A. Behavioral.
Given 20 names of prominent figures and significant events from the history of Pennsylvania which are found in the game, (see Section III, B) the children should be able to identify these figures and events correctly and list their historical significances.

B. General.
In this game the students must formulate their own questions from given answer cards. STUMP THE STARS should thus enable the children to take a given person, place or event and formulate an intelligible question about the answer.

III. Materials and Game Components.

A. Needed Materials.
1. Index cards, 3" x 5".
2. 1 sheet colored poster board.
3. Brass fastener.
4. Magic markers.

B. Construction of Game Components.
1. Index cards are used to make three identical decks of answer cards. Sample deck of possible answer cards:

1. WILLIAM PENN

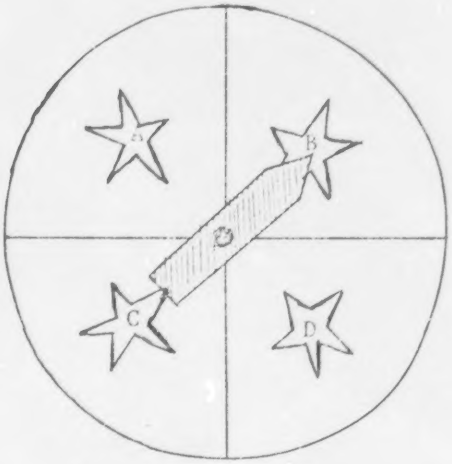
2. GENERAL BRADDOCK

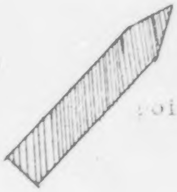
3. MASON & DIXON'S LINE

4. WILLIAM PITT

5. Conestoga wagons
6. Daniel Boone
7. Lancaster Turnpike
8. Cumberland Road
9. Penn's Woods
10. Philadelphia
11. 1681
12. Valley Forge
13. Keystone State
14. Amish
15. Tinicum Island
16. Peter Stuyvesant
17. Quakers
18. Tamenend
19. John Forbes
20. Charter of Privileges
21. Fort Stanwix Treaty (1768)
22. First Continental Congress
23. Wyoming Valley Massacre
24. Anthracite
25. Benjamin Franklin
26. Liberty Bell
27. Independence Hall
28. Whiskey Rebellion

2. Spinner.
Cut a circle of diameter 18" from the sheet of colored card.





Draw lines through the center of the circle to divide it into four equal quadrants. In each quadrant draw a star and label each star A, B, C or D as shown above. Cut out a pointer from remaining card and color it black with magic marker. Fix pointer to center of circle with a brass fastener. Attach the pointer loosely so that it will spin easily.

IV. Procedures.

A. Divide the class into four equal groups A, B, C and D.

B. Spin the SPINNER to determine which group will be the first STAR TEAM.

C. This group will sit in a row at the front of the class facing the class.

D. The remaining three groups sit in separate circles in corners of the room; each group selects a spokesman.

E. The teacher gives a deck of answer cards to each of these three groups. The cards are shuffled and placed face downward on a desk in the middle of each group.

F. Star team player #1 spins the spinner to determine which group will ask him his question. If he spins his own group he may choose his own question team. All questions must pertain to colonial Pennsylvania.

G. The team asking the question draws the top card from their deck and the group together formulates a question to which the words on the card are the answer, e.g., Card: WILLIAM PENN.

Possible questions: 1. Who founded Pennsylvania?
2. For whom was Pennsylvania named?

H. The spokesman from the question team asks the question. If the spokesman cannot think of a question his team forfeits 2 points.

I. The member of the star team should give the answer on the card. He gains 5 points for a correct answer. If he cannot answer, but another star can, the team gains 2 points.

If the stars do not give the correct answer they gain no points.

If the question team asks a wrong question they forfeit 2 points to the stars. The teacher is the final judge if any problems arise about the question formulated.

J. The game continues with player #2 spinning the SPINNER to select his question team. This procedure continues until each star has had an opportunity to answer a question.

K. A new star team is selected and the game proceeds as before until each team has been the stars.

V. Win Criteria.

The team with the most points wins.

VI. Debriefing.

A. The following questions may be appropriate:
   1. Why do you think you won (lost) the game?
   2. How important do you think your own ability to make up a question was in the playing of this game?
   3. How much did you already have to know about Pennsylvania history to play the game well?
   4. Did you learn many new things about Pennsylvania history while playing the game?

B. Test according to the behavioral objectives.

SUNNY NUMBERS

I. Overview.

SUNNY NUMBERS is a board game designed to teach recognition and counting of numerals one through 10. Pupils become familiar with the numerals by seeing, hearing, and repeating them throughout the game. Designed primarily as a kindergarten/first grade game, this game format could be used for older children who have difficulty in numeral recognition and comprehension.

The same game format can be used by replacing the numerals with letters of the alphabet. If the alphabet is used, the player would simply hang a single ring on the correct letter and then proceed according to the game procedures outlined. This game can also be used in certain math processes, e.g., adding and subtracting.

II. Objectives.

A. Behavioral.
   1. Given a set containing one to 10 objects, the child should be able to count the objects correctly.
   2. Given a set containing one to 10 objects and a scrambled set of number cards reading from one to 10, the child should be able to select the correct number card to match the given set.
   3. Given a scrambled set of number cards reading from one to 10, the child should be able to read each card correctly.

B. General.
   The concept of numbers should be understood by the children.

III. Materials and Game Components.

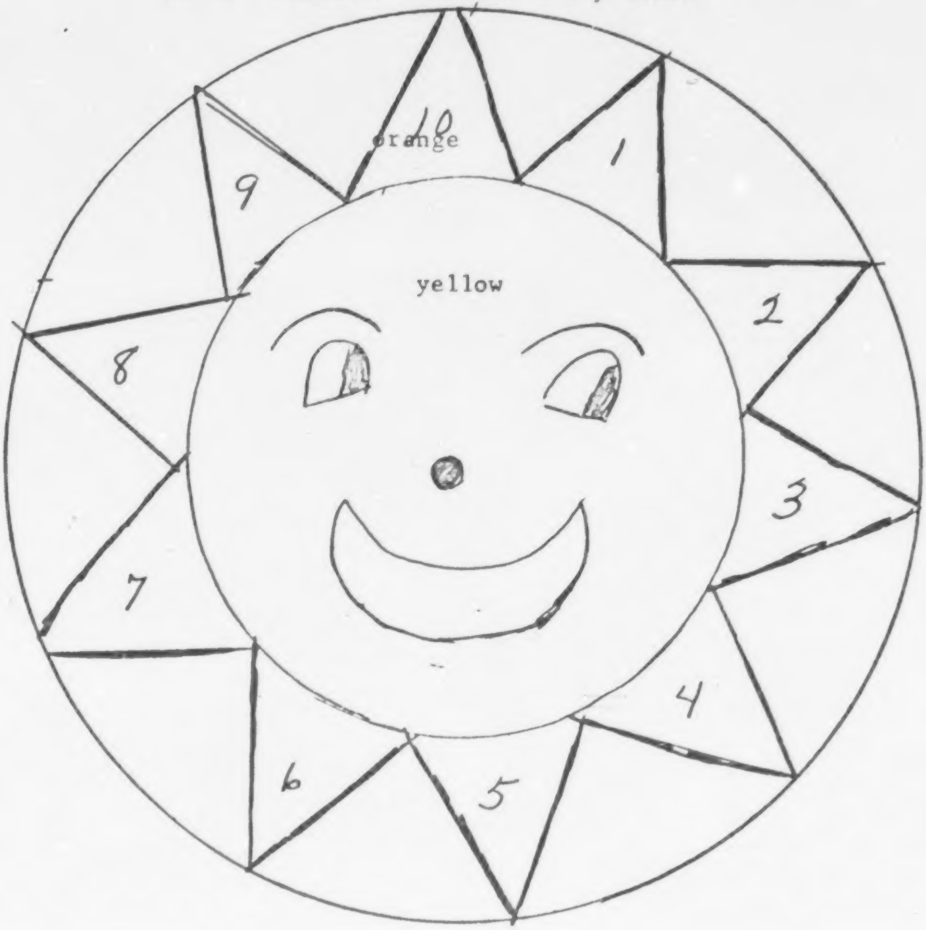
A. Needed Materials.
   1. 9" X 12" sheets of colored construction paper (one per child).
   2. Round plastic counters (10 per child).
   3. Felt-tip markers: black, yellow, orange, red, blue, green, purple.
   4. Five 22" X 28" sheets of white poster board.
   5. Masking tape.
   6. 2 yards of red gros- grain ribbon (1" wide).
   7. 2 yards of white gros- grain ribbon (1" wide).
   8. Ten 3" X 5" unruled index cards.
   9. Eleven giant paper clips.

B. Construction of Game Components.
   1. Individual counting boards:
      a. Cut each 9" X 12" sheet of construction paper so that it measures 9" X 10".

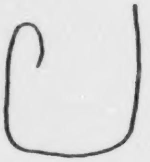
b. Use a black felt-tip marker to construct the following pattern on the paper:

1	2	3	4	5
6	7	8	9	10

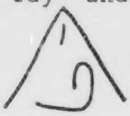
2. Mr. Sunshine board:
   a. Join 4 22" X 28" sheets of poster board with masking tape to make a square.
   b. Draw a circle (20" radius), using the place where the four corners meet as the center of the circle.
   c. Draw another circle (28" radius) around the first.
   d. Mark off every 36° on the inner circle.
   e. Mark off every 36° on the outer circle so that these marks fall half-way between the marks on the inner circle.
   f. Draw straight lines to connect the marks, making ten "rays" on Mr. Sunshine. Cut on heavy lines.



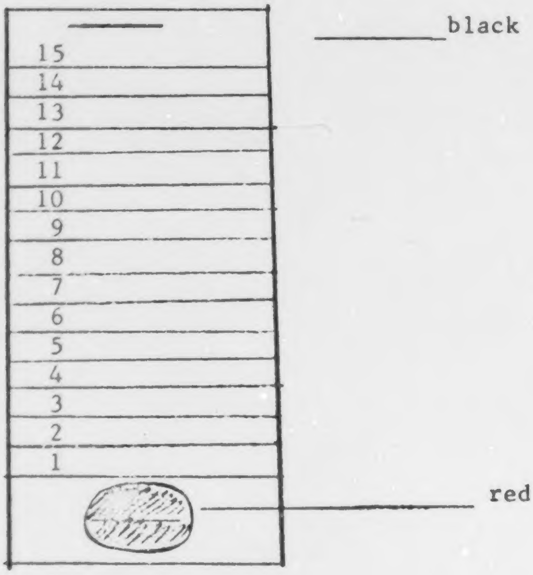
g. "Rays" are colored orange; center face yellow.
h. With a black felt-tip marker, write the numerals and draw the face.
i. Bend 11 giant paper clips into hooks, i. e.



j. Insert one hook into each "ray" and one near the nose, so that the single end goes through to the back of Mr. Sunshine. Tape the clip fast to the back so that it does not move.



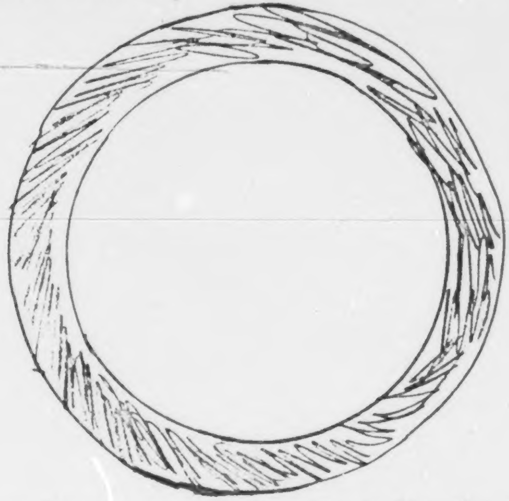
3. Scoring thermometer chart (two):
   a. Cut two 6½" X 28" strips of poster board.
   b. Using red and black felt-tip markers, make the strips resemble thermometers. Each thermometer should contain 15° as pictured.



   c. Cut a 1½" slot across the red circle, and another above the middle of the top line (# 15).
   d. Measure the distance between the two holes, and add ½". Cut four pieces of ribbon (two red, two white) this length.
   e. Take one red length and one white and stitch them together across their width, overlapping ¼".
   f. Slip this strip through the slots on the thermometer and stitch the loose ends together to make a continuous strip (the red ribbon

represents the mercury rising on the thermometer and, thus, keeps score).

4. Numeral cards:
    a. Using 10 - 3" X 5" unruled index cards, write a numeral (from 1 to 10) on each.
    b. On the back of each card, draw a "Mr. Sunshine."
5. Counting rings:
    a. Make 10 small, colored rings (1½" radius) out of poster board. Color with felt-tip markers.



    b. Make two large rings (2" radius) for the center ring-toss.

IV. Procedures.

A. Tack or tape "Mr. Sunshine" where it can be seen by the whole class.
B. Scramble the numeral cards, stack, and place numeral side down. Put the pile on a table near Mr. Sunshine.
C. Put the counting rings in an open box near the numeral cards.
D. Tack or tape the two thermometers close to Mr. Sunshine. Label one thermometer "Team 1" and the other "Team 2".
E. Divide the class into two teams. Each child receives 10 counters and a counting board.
F. Team 1, player 1 chooses the top numeral card from the pile and reads the numeral aloud. If he is unable to read it, he may choose someone from his team to tell him.
G. The player then selects the appropriate number of counting rings from the box. He takes the counting rings to the numeral on Mr. Sunshine which corresponds to the numeral on the numeral card. He puts the rings on the appropriate hook, counting by ones as he does so.
H. If he does this correctly, his team receives 1 point, and he may move the scoring thermometer one degree. The child has now earned the opportunity to try to "ring" Mr. Sunshine's nose. He has two chances to do so. If he makes a ringer on either of the two chances, his team receives a bonus point, and he is able to move the thermometer one more degree.
I. If the player requires help in reading the numeral card, he does not receive the opportunity to try to ring the nose. (His team still receives one point if he chooses the correct numeral on Mr. Sunshine and counts correctly.)

J. Meanwhile, the players at their seats should have found the correct numeral on their counting boards and have placed the appropriate number of counters below it. They can check themselves as the player at the Mr. Sunshine board counts aloud.

K. The same procedure continues for Team 2, etc., until the time allotment is over or until a team gets 15 points.

V. Win Criteria.

The team with the "hottest thermometer" (highest score) at the end of the game or the first team to get 15 points wins. (This is determined by the teacher.)

VI. Debriefing.

A. The following questions may be appropriate:
   1. Who from Team One can count the score by ones? Repeat for Team Two.
   2. Which team's score is the highest? Which is the lowest?
   3. Why did Team ( ) win?
   4. What happens on a real thermometer when the red line rises?

B. Place a set of objects (10 or less) and the Sunny Numeral Cards in clear sight. Ask "Who can count this set?" "Who can find the numeral card to match the set?" Continue with several sets.

C. Other activities:
   1. Count 1, 2, 3, _________. Ask question, "Who can tell what number comes after three?" Repeat the same process with several other numbers.
   2. Place a scrambled set of numeral cards, 1-5, in front of the class. Ask, "Who can put these in the correct order?" Do the same thing with cards 1 to 10.
   3. Ask, "Who can count to five without looking at the cards? "Same to number 10.
   4. Ask, "Who can bring me 3 pencils? 5 pencils? 7 pencils? 9 pencils? 10 pencils?"

D. Test according to the behavioral objectives.

VII. Results of Tryout.

TAKE AND MAKE

I. Overview.

TAKE AND MAKE is a phonics game designed to teach initial consonant sounds and the letter which corresponds to each sound. It also teaches or reviews rhyming words. A first and second grade game, TAKE AND MAKE can be played in two circles of 10 children.

A teacher could substitute blends, such as bl, fl, cr, st, for the single consonant sounds in the game. Word parts other than those given in the game could also be used.

II. Objectives.

A. Behavioral.

1. Given: (1) the following printed list of 10 word parts taken from section IV of the game:

oat
ake
ish
ay
am
ig
ing
op
at
et

and (2) each of the following words pronounced by the teacher:

coat
make
dish
hay
jam
pig
wing
top
bat
set

the student should be able to construct the eight words by writing the beginning letter before the word part of the corresponding word as it is given by the teacher.

2. Given two words which are comprised of a word part from section IV of the game (oat, ake, ish, ay, am, ig, ing, op, at, et) and a beginning sound, such as the c in cake and cat, the student should be able to name orally two rhyming words for each with 100% accuracy.

B. General.

Through learning initial consonant sounds, letters, and rhyming words, the child should be able to improve his ability to attack new words phonetically; thus, he should be improving his reading ability.

III. Materials and Game Components.

A. Needed Materials.

1. 2 sheets of white poster board (28" x 22").
2. 1 sheet of colored poster board.
3. 2 brass fasteners
4. Glue or paste.
5. Stapler.
6. 6 sheets of oaktag (18" x 24").
7. 22 pieces of colored construction paper.
8. Black felt-tip marker.

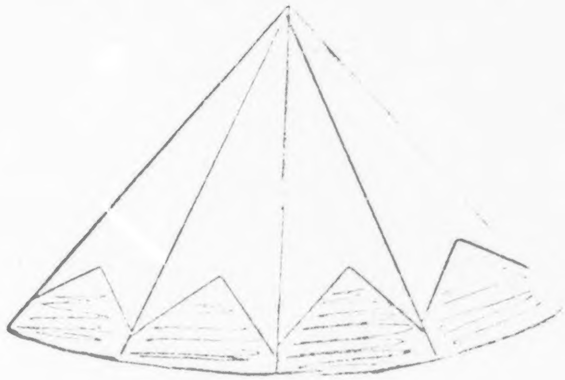
B. Construction of Game Components.

1. Consonant spinning board (construct two):

   a. Draw a large circle, approximately 20" in diameter, on white 28" x 22" poster board; divide the circle into 21 equal sections (approximately 18-1/2° / section).

   b. Construct the spinner from colored poster board and a brass fastener. (Place a small cardboard cylinder between the board and the spinner to facilitate spinning.)

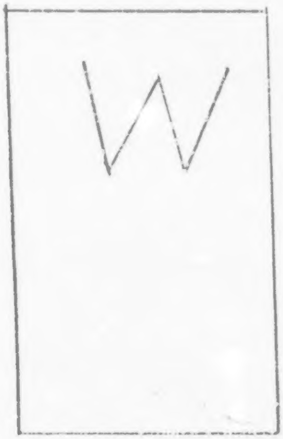
   c. Cut triangles from the construction paper; these must fit into the outer ends of the 21 sections (see diagram).



Glue the broad end of each triangle to the circle, being careful to glue just the lower edge; do not glue the apex. The triangles will serve as pockets for the consonant cards.

Print a different consonant on each triangle: b, c, d, f, g, h, j, k, l, m, n, p, qu, r, s, t, v, w, x, y, z (use qu instead of q).

d. Cut 84 1" x 2" poster board rectangles. Make four consonant cards for each consonant by printing one letter in each rectangle, as shown.



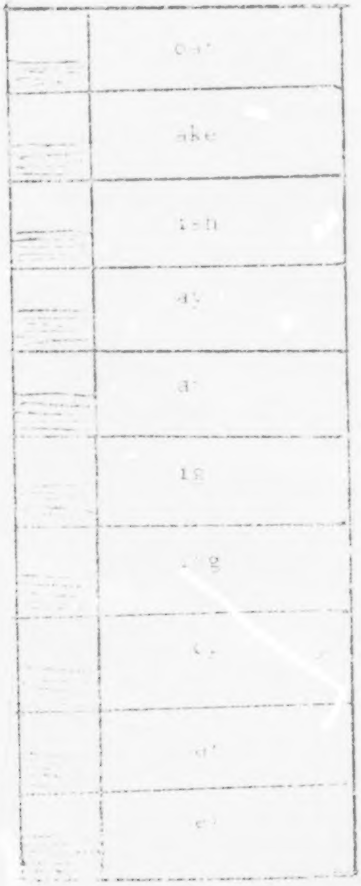
Place these consonant cards in the appropriate pockets.

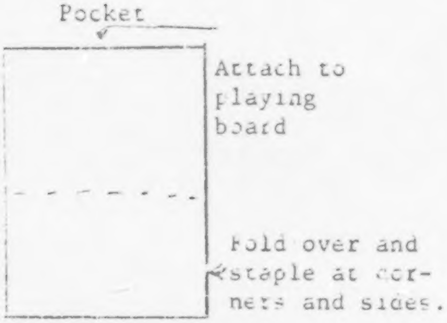
2. Individual playing boards (construct 10 of the following):

a. Cut a 6" x 20" strip of poster board; vertically divide it into 10 6" x 2" sections.

b. With a stapler, attach pockets, formed by folding a strip of construction paper, at the extreme left hand side of the board. Print the following word parts in the 10 spaces as shown:

oat, ake, ish, ay, an, ig, ing, op, at, et.





IV. Procedures.

A. Divide the class into two groups of ten; divide these groups into five teams of two. Arrange the two large groups in two circles with a spinner in the center (children may be seated on the floor or at their desks). Each group plays a separate game (game procedure for each group follows).

B. Each team of two receives a playing board. Teammates make decisions together.

C. All word parts on the playing board are read aloud.

D. Team 1 spins the spinner on the spinning board. It must name the consonant to which the spinner points. If it names it correctly, it may take a consonant card from that particular consonant pocket; if it is unable to name the consonant, it may not have a card, and the game progresses to the next team. If a team is able to take a consonant card, it does so and tries to establish a complete word on its playing board by placing the card in the pocket preceding the appropriate word part. It must read the word it has established.

If a team establishes an incorrect word, it may be challenged. If the challenging team is correct and can make a real word, it may keep the card.

E. A team may change its consonants around as long as this is done during its turn. It may also trade consonant cards with any other team, if done during its turn.

F. The game proceeds until a team has filled its game board (or until the end of a given time period).

V. Win Criteria

The first team to have completed 10 words correctly and to be able to read them is the winner (or the team with the most words formed correctly at the end of a given time period).

VI. Debriefing

A. The following questions may be appropriate for the winning team:

1. What words did you make on your board? How do you spell them?
2. What did you do to win?
3. Were you able to trade any cards?
4. Did you correct any errors of others? Which ones?
5. Did you change consonants? Which ones? Why?

B. The following questions may be appropriate for the whole class:

1. How many teams had only one word? Two? Three? Four? Five? Six? Seven? Eight? Nine?

2. Which word ending can be used to make the most three letter words? (ay)
Which word part is used to make the fewest number of words? (ish)
Let's see how many we can name for each word part. (List on the board as they're named.)
4 - oat - boat, coat, goat, moat
10 - ake - bake, cake, fake, lake, make, quake, rake, sake, take, wake
3 - ish - dish, fish, wish
12 - ay - bay, day, gay, hay, jay, lay, may, nay, pay, ray, say, way
5 - am - dam, ham, jam, ram, yam
7 - ig - big, dig, fig, jig, pig, rig, wig
7 - ing - ding, king, ping, ring, sing, ting, wing
7 - op - bop, cop, hop, mop, pop, sop, top
10 - at - bat, cat, fat, hat, mat, pat, rat, sat, tat, vat
11 - et - bet, get, jet, let, met, net, pet, set, vet, wet, yet

3. What did you notice about all the words in each group? (They end the same, sound the same.)
Have the class choose several words from each group to be used in sentences.

4. What name do we give to words that sound alike except for the beginning sound? (Rhyming words.)

5. Who can think of a word that rhymes with "shoot"? With "game"? With "book"?

C. Test according to the behavioral objectives.

VII. Results of Tryout.

WHIZ-MATE

I. Overview.

This card game was designed for lower elementary grade pupils to increase their awareness of numbers and numerals one through 10. This game can be adapted for higher grade levels by using larger numbers or by using subtraction, multiplication, or division processes.

An able or perceptive child may notice that one can use more complex combinations to make the number eight. For example, instead of using pairs of numerals, a child could play the game finding combinations of three, four or more numerals.

e.g. 8 = 0 + 1 + 7 8 = 1 + 2 + 3 + 2
8 = 2 + 3 + 3 8 = 0 + 2 + 5 + 1
8 = 6 + 1 + 1 8 = 1 + 1 + 1 + 5

II. Objectives.

A. Behavioral.
  1. For any given number between three and 10, the child should be able to list all possible two-number combinations which together are equal in value to that given number.
  2. Given a list of numerals from zero to 10, the child should be able to name them correctly and place them in ascending order.
  3. Given any counter or numeral from zero through 10 and a supply of objects, the child will be able to form a set with the objects which contains the same number of members as the given numeral indicates.

B. General.
  It is hoped that the children will better understand the communitive law.

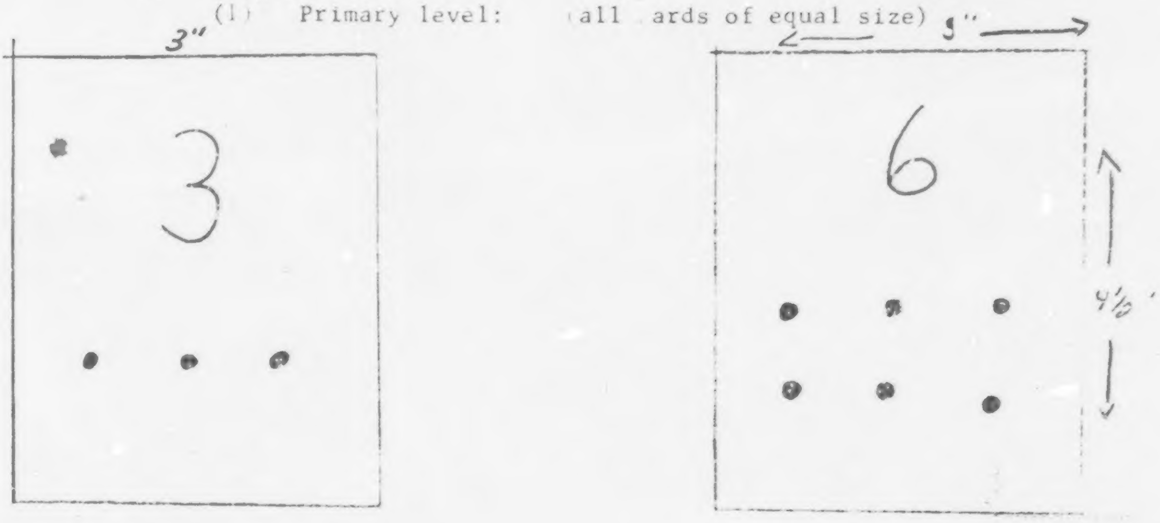
III Materials and Game Components.

A. Needed Materials.
  1. Construction paper in 11 different colors (one color for each different numeral).
  2. 1 felt-tip marker.

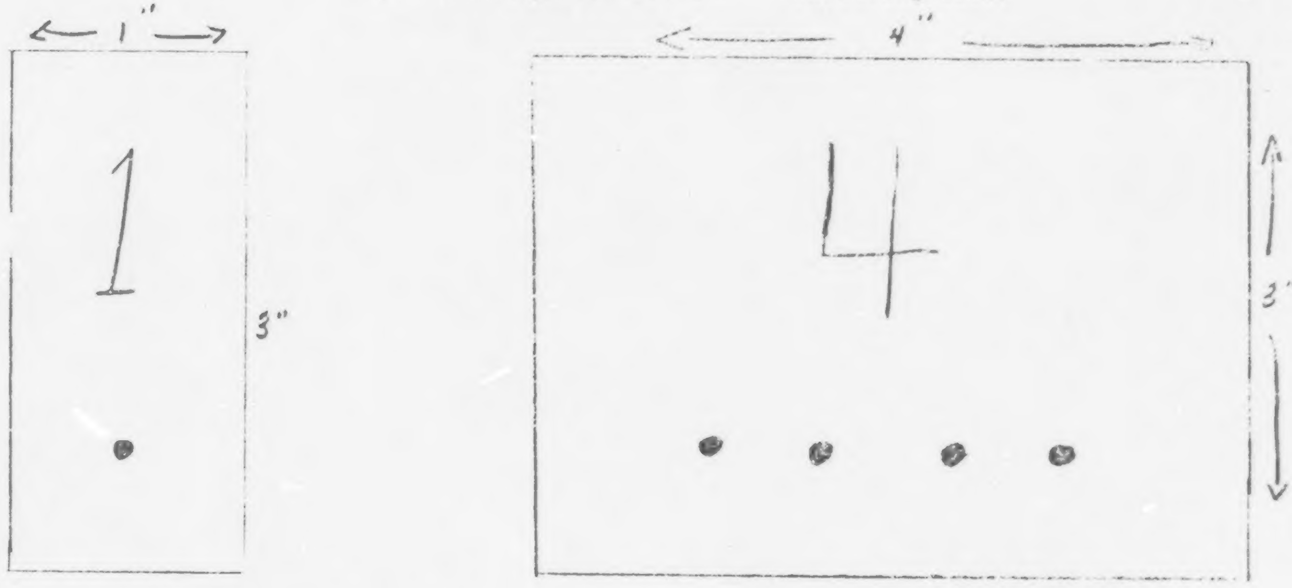
B. Construction of Game Components.
  1. Game cards
    a. The construction paper is cut into the required number of pieces, each bearing a numeral and the number of dots represented by that numeral (For kindergarten level, cards could be sized according to the numeral represented: one is of unit width, 5 is five times as wide; therefore, a 5 card and a 1 card would together be equal in width to a 6 card.)

b. Diagrams of cards.

(1) Primary level: (all cards of equal size)



(2) Kindergarten level: (excluding zero)



The cards should represent the numbers 0 through 10, allowing two cards of each type per child. For example, six children would need 12 zero cards, 12 one cards, etc., between them up to 1[illegible] ten cards.

IV. Procedures.

To investigate, for example, the number 8, via addition.

A. Divide the class into small groups of four or six children; select a dealer from each group.

B. Give each dealer a pack of cards containing two cards of each type per child to deal to his group. (In this case the cards used will only be those from "zero" to "eight" in value.) The children should not touch these cards until a signal is given by the teacher.

C. Period # 1.
Allow 5 minutes (or a time period suited to the ability of the children) in which each child sorts out his cards and arranges them in pairs so that the combined value of each pair is equal to 8.

Some cards will be superfluous to him and he will need other cards in order to complete all nine possible combinations. Only one example of each combination is allowed, but 1 and 7 is considered different from 7 and 1 etc.

D. Period #2.
Allow 5 minutes "Trading Time" in which children can exchange cards (one for one) with others in their own group. Here, the aim is for pupils to get rid of their superfluous cards and to acquire those which they need.

E. Period #3.
Allow 5 minutes to complete the arranging of cards to make the greatest possible number of different combinations from the cards at hand. Each card can be used just once.

F. Let members of each group check each other's results. The teacher can clarify any problems which may arise. In kindergarten, the teacher will have to check all results but sets of numbers will be small because of the smaller numbers used at this level.

G. Score, allowing one point for each correct combination.

V. Win Criteria.

A. The winners are the children with the highest score in their group.

B. The overall winner is the child with the highest score in the class.

C. The winning group is the group with the highest total score for all its members. In replay, winners could compete at the same table, those with the second highest score at the same table, etc., so that less able students will have a chance to be winners and more able pupils will have more competition.

VI. Debriefing.

A. The teacher may ask the following questions:
   1. Ask winners: Why did you win?
      Answers might include:
         a. orderly organization of cards during Period #1.
         b. knowledge of values of numerals without need to count dots each time.

2. Ask others: Why did you not [illegible]
   Answers might include:
   - a. repetition of same combination.
   - b. insufficient time for trading.
   - c. unfamiliar with values of numerals.

B. On the blackboard list and arrange children's results so that a complete list of combinations is obtained. Organize the combinations in such a way that children can see the pattern [illegible].

e.g. 0 and 8
1 and 7
2 and 6
3 and 5
4 and 4
5 and 3
6 and 2
7 and 1
8 and 0

The children will notice the step-up pattern of the left hand column and the step-down pattern of the right hand column, [illegible] to 8, and may extend the idea when dealing with any [illegible] other than 8.

Introduce + and = notation as a good way of summarizing:
0 + 8 = 8
1 + 7 = 8
2 + 6 = 8

C. Test according to behavioral objectives.

VII. Results of Tryout.

WORD JUMBLE

I. Overview.

This board game teaches the concepts of parts of speech, specifically those of verb, noun, pronoun, and adjective. It was designed for intermediate English classes. The game can be played by as few as two children or as many as the entire class.

The playing board from WORD JUMBLE can be used in any other area of the curriculum, especially spelling and mathematics.

II. Objectives.

A. Behavioral.

1. Given the following list of 20 sentences in which 35 words have been underlined, the child should be able to identify correctly at least 23 parts of speech by writing N, V, P, or A above the underlined words.
   - a. The girl asked for my address.
   - b. Mrs. Brown is careful when she drives the car in the center lane.
   - c. Dorothy can comb her hair.
   - d. Tom likes to watch his father train the race horse.
   - e. Do you ever hear the train whistle as it goes past the house?
   - f. Her rose dress is at the cleaners.
   - g. The sound track of the film was damaged.
   - h. The cave man lived many, many years ago.
   - i. Her uncle is a test pilot.
   - j. Elaine likes to fly in the plane with her father.
   - k. The wheel of the bicycle has a flat tire.
   - l. Did Father cash his check at the bank?
   - m. Ruth Ann wishes that her cow would win the prize at the fair.
   - n. An earthquake can rock a house.
   - o. It is a deep ditch.
   - p. He likes to dream of Santa Claus.
   - q. There was a change in the football line-up.
   - r. Can you store it down in the cellar?
   - s. I can wheel it over to your repair shop after I change my clothes.
2. Given the following list of 24 words including nouns, pronouns, adjectives, and verbs, the child should be able to construct at least 17 sentences, using at least one of these words in each sentence. He must then indicate how he used the word by writing N, V, P, or A above it. Extra credit will be given if the capitalization and punctuation are accurate.
   - 1. tired
   - 2. he
   - 3. run
   - 4. soft
   - 5. stamp
   - 6. pen
   - 7. wish
   - 8. she
   - 9. watch
   - 10. sad
   - 11. dust
   - 12. class
   - 13. gray
   - 14. fly
   - 15. drive
   - 16. catch
   - 17. good
   - 18. blue
   - 19. drive
   - 20. roast
   - 21. brown
   - 22. it
   - 23. pass
   - 24. wish

3. After playing the game, the child should be able to write a paragraph, motivated by the game or some other external stimulus determined by the teacher. He should be able to use at least 15 nouns in the paragraph. He should then be able to substitute a pronoun for each noun by writing an appropriate pronoun above the noun. Extra credit will be given if the child supplies a possessive pronoun. The lower limits of acceptable performance will be 11 correct responses in a 20 minute period.

B. General.

1. The child should become familiar with variations of a basic sentence pattern; for example, the N - V pattern, the N - V - N pattern, the N, LV, N pattern, the N, LV, Adj. pattern, or the SNP + VP pattern. (N = noun, V = verb, Lv = Linking verb, S = Sentence, NP = Noun Phrase, VP = Verb Phrase, Ad = Adjective.)

2. The child should come to understand that oral communication can be informal, but that usage should be gramatically effective and generated by the rules of grammar.

3. The child should become aware of the versatility of words. For example. the word sound can be employed as a noun, an adjective, or a verb, or it can be replaced by the pronoun it.

III. Materials and Game Components.

A. Needed Materials.

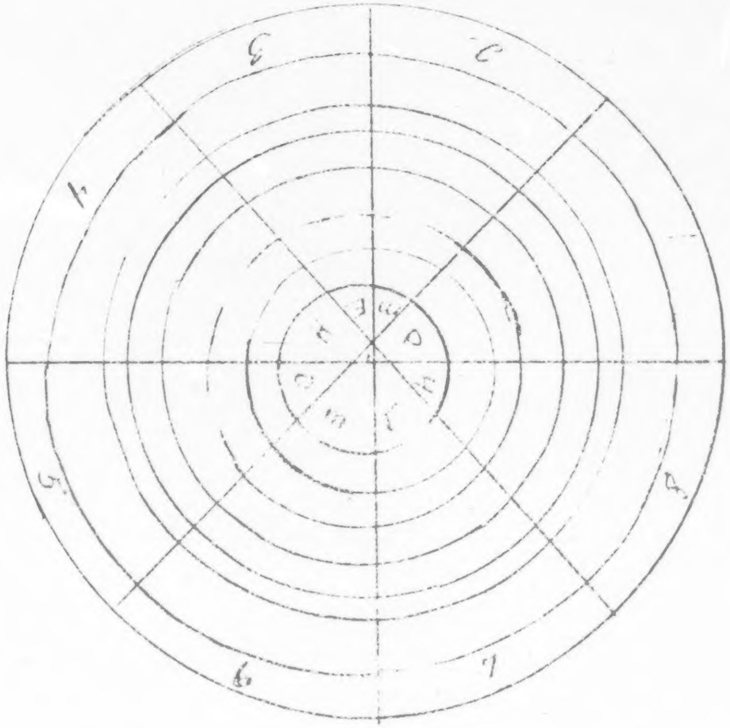
1. 8 sheets of white poster board (22" X 28").
2. 5 felt-tip markers (red, yellow, green, blue, black).
3. 8 sheets of construction paper (2 red, 2 green, 2 yellow, 2 blue)
4. 1 can of rubber cement or any adhesive.
5. Pint-size plastic container complete with lid. (Round container is easier to handle.)
6. Alphabet stencils (used to make the word HOME).
7. Chalkboard compass (this is optional; if one is unavailable, attach a string to a piece of chalk).
8. 8 quiet counters or soft plastic disks (if unavailable card-board disks the size of a nickle may be used).
9. 4 cubical counting blocks (red, yellow, blue, green).
10. Masking tape.
11. Yardstick or ruler.

B. Construction of Game Components.

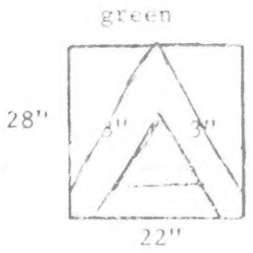
1. Playing Board:

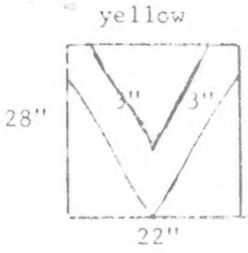
a. Tape together four sheets of white poster board. On the opposite side, draw a large circle 43" in diameter; using a yardstick, divide this circle into eight equal parts. Center the chalkboard compass, and, beginning at the perimeter of the circle, divide the circle into eight concentric circles with approximately two inches between each line (the center circle should be approimately 12" in diameter). Number the outer sections nearest the perimeter 1 to 8. In the center circle, use a felt-tip marker to color in each of the eight triangular sections (yellow, red, and blue are very colorful and effective).

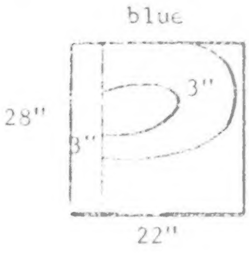
b. Use stencils and assorted colors of construction paper to make two sets of the following letters: H, O, M, E. Paste these letters onto the eight colored triangular sections in the center of the circle. (For expediency, you may prefer to print the preceding letters on the playing board.) See Diagram.

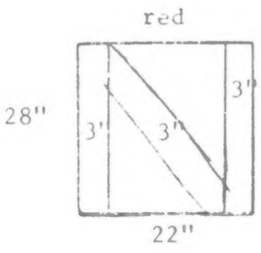


2. Word Charts:
   a. Print each of the following letters on a separate sheet of white posterboard: V, P, N and A, making the letters as large as the posterboard (22" X 28"). Make the inside area of the letters 3 inches wide. Use a yellow felt-tip marker to make V, red for the N, green for the A, and blue for the P. See illustrations.


green
28"
3"
3"
22"


yellow
28"
3"
3"
22"


blue
28"
3"
3"
22"


red
28"
3"
3"
3"
22"

b. Cut construction paper into 2" X 3" sections. Twenty-four sections of each color or 96 cards are needed.

c. Print each of the following 24 words on a separate 2" X 3" yellow card. Repeat this step with the blue, green and red 2" X 3" cards. (In other words, these words are printed four times, once on cards of each color.)

sound
test
comb
trick
prize
pop
train
ditch
address
race
center
cash
steering
change
rose
screen
wheel
rock
cave
store
fly
dance
bank
dream

d. Paste the 24 yellow Word Cards on the large yellow V Word Chart, the green Word Cards on the A, the blue Word Cards on the P, the red Word Cards on N, using a different word order for each chart.

e. On each of the Word Charts, number the set of Word Cards 1 to 24, using a black felt-tip marker.

3. Wooden Cubes:

a. Saw the four cubical counting blocks into four equal sections (they will resemble sugar cubes). There will be four of each color or 16 cubes.

b. Using the black felt-tip marker, place numerals 1 to 24 on the sides of the red cubes, 1 to 24 on sides of the blue cubes, 1 to 24 on the yellow, and 1 to 24 on the green. (You can attach small sections of masking tape to the sides of the cubes and place numerals on the tape, using each numeral only once on each color.)

4. Word Tumbler:

a. Place the cubes in the plastic container.

b. Cut a hole in the lid of the container (1" X 1" or large enough for a wooden block to escape, when the container is inverted).

IV. Procedures.

A. Eight children may play this game at one time. Each player selects a number 1 to 8, takes his place at the Playing Board, and places a counting disk on his number near the perimeter of the circle.

B. Player #1 shakes the Word Tumbler, which contains the 16 blocks, inverts it, and permits one of the blocks to escape. He reads the numeral and notices the color of the block. For example, if the block indicates 3- red, the child refers to the third word on the red Word Chart, which, in this case, is N for noun. The child must construct a complete sentence, using this third word as a noun. If he fails to use the word as a noun, or if he fails to construct a grammatically correct sentence, he loses his turn, and the next player is permitted to correct the error. If the second player succeeds, then he may move his counting disk one space toward HOME.

C. Variations of a basic sentence pattern may be injected into the game by permitting the child to correct the error and state the sentence pattern for the one step toward home.

D. If a child happens to shake a blue block from the Word Tumbler, he will refer to the P Word Chart, which includes the same words as the other Word Charts. The child will read the word on the P Word Chart and construct a complete sentence, using the word as a noun. He is then required to construct a second sentence, this time substituting a pronoun for the noun. If he completes this task successfully, he is given a bonus and permitted to move two spaces ahead toward HOME. This P Word Chart is the only chart which offers a bonus for the correct responses. No partial credit is given. The child is either successful and gains two steps toward HOME, or he fails and his disk remains stationary.

E. Each player takes his turn, shaking and inverting the Word Tumbler, reading the numerals, checking the colors, and constructing his sentences. The game continues until one of the players reaches HOME.

F. For purposes of debriefing the students and reviewing sentence patterns used in the game, the teacher should list some of the sentences which are constructed by the students.

V. Win Criteria.

The first child to reach HOME is the winner. Lesser winners can be determined by checking the Playing Board to see who is closest to HOME; the closer the better.

VI. Debriefing.

A. The following questions may be appropriate.
  1. Ask the winners:
    (a) Why do you think you won the game?
    (b) Did the parts of speech have any conventional position in the sentence? If so, where did you place the noun, verb, pronoun, and adjective?
    (c) Did you use many determiners or noun markers in your sentences (a, an, the)? How did they help you with the sentence?
    (d) Which part of speech presented the most problems to you? Why do you think it did so?
    (e) How did you illustrate proper usage in your sentences?
  2. Ask the losers:
    (a) How do you think you can improve your performance in the game?
    (b) What parts of speech gave you the most trouble? Why do you think they presented the most problems?
    (c) How can one word be used as so many different parts of speech? Give an example.
    (d) How did the use of the adjective help you to construct an expanded sentence?
  3. General questions:
    (a) As you examine your performance in the game, what have you discovered that can improve your conversation with others?
    (b) How did you illustrate proper usage in your sentences?
    (c) How do you think you can use this knowledge of parts of speech to improve your speaking and writing?

(d) How could the inflection of your voice help you to know how to punctuate a sentence correctly?

(e) What pronouns did we use in the game? Can you think of others (his, hers)? What kinds of pronouns are these? Why do you think they are called possessive pronouns?

(f) What two parts of speech are required to construct a sentence? What are the two main parts of any sentence?

VII. Results of Tryout.

YUK! YUK! THE DIRTY GAME

I. Overview

This card game teaches the causes and solutions for various pollution problems. It is available in a comic version for grades K-2 and in a more sophisticated version for grades beyond grade 2. The game can be played as either a solitaire or small group game.

II. Objectives

A. Behavioral.
1. After playing the game the student should be able to name at least seven causes of pollution.
2. After playing the game the student should be able to match the causes and solutions for the pollution problems used in the game.

B. General.
1. The student will become aware of the fact that there are certain practices which are affecting public welfare.
2. The student will realize that these practices can be altered to reduce the apparent danger.

III. Materials and Game Components

A. K-2 Version:
The deck contains 44 cards; two each of the following pairs:

Good Guys	Bad Guys
Carbon Clean	Danny Diesel
Static Sue	Sooty Sal
Pickup Pete	Litter Lil
Bridget Bright	Beulah Belch
Clean Craft	Crummy Cruiser
Bag Orbarrel	Highway Henry
Electric Ed	Adam Auto
Freddie Filter	Sally Smog
Chester Clean	Denny Dump
Carla Cork	Oily Slick
Ivan Quit	Sammy Smoke

B. Intermediate Version:
The deck contains 44 cards; two each of the following pairs and four Wild Cards:

Cause	Solution
People: The Earth Spoilers	Education
Sewage	Filtering, Settling, and Aeration
Jet Wastes Molecular Carbon	Altered Jet Combustion System
Diesel Fumes: Molecular Carbon	Exhaust Emission Control (a filter)

Smog: Molecular Sulphur & Chemicals	Sulphur Recovery Plants
Automobile Fumes: Carbon Monoxide	Electric Engine
Soot: Carbon Dust	Electrostatic Precipitator
Fresh Water Oil Slicks	Electric Outboard Motors
Ocean Oil Slicks	Explosion Control Valve(Cutoff at Ocean Floor)
Garbage	Anaerobic Composts (Air and Water Removed)

IV. Procedures

A. K-2 Version

1. Solitaire
    - a. After cards are shuffled, top 15 cards are dealt into five piles, containing one to five cards, face down.

Pile number:	①	②	③	④	⑤
No. of cards:	1	2	3	4	5

    - b. Top card of each pile is overturned.
    - c. The only way to remove each of these top cards is to match it with either another top card or one from the remaining deck in the player's hand.
    - d. When the top card is removed from any pile, the next card is overturned.
    - e. The player may go through the deck twice, one card at a time.
    - f. Game continues until all the cards in the piles have been matched or the player has gone through the deck twice.
2. Small Group (2-4 players) YUK! YUK! Concentration
    - a. Cards are shuffled and spread over a desk top, facedown.
    - b. Players rotate, taking turns overturning two cards.
    - c. When a match is made, the player may keep the two cards.
    - d. Game continues until there are no cards left on the table.

B. Intermediate Version

1. Solitaire: Played like the K-2 Version with the following additional rule: Wild cards match anything.
2. Small Group (2-4 players) YUK! YUK! Rummy
    - a. The cards are dealt, one at a time, until each player has seven cards.
    - b. The remaining cards are placed facedown on the center of the table. To start the discard pile, the top card is turned face-up and placed beside the facedown cards.
    - c. The object of the game is to match as many pairs of causes and solutions as possible. Wild cards match any other card.
    - d. The player to the left of the dealer starts the game play. He either selects the faceup card or draws one from the top of the deck. He must discard one card from his hand, placing it face-up below the card(s) on the discard pile.

e. Before he makes his discard, a player may lay any matching pairs on the table before him. If a player holds a wild card, he may use this card to make a set if he can state the cause or solution that card represents. In laying down any pair, the player must state what the cards are. If he has an incorrect pair, the cards must go back into his hand.
f. Any player may play on another player's wild card pair. When it is his turn the player may lay the matching card to another player's wild card pair. The point goes to the player laying the card.
g. A player may take as many cards as he wishes from the discard pile as long as he can immediately make a pair with the top card drawn.
h. A player must discard a card in order to go out.
i. After a player has gone out, each player tallies his points. (See Win Criteria.)

V. Win Criteria

A. K-2 Version
  1. Solitare: The player wins if he is able to match all the cards in the five piles by going through the deck no more than twice.
  2. YUK! YUK! Concentration: The player with the most matched pairs at the end of the game is the winner.

B. Intermediate Version
  1. Solitare: Same as K-2 Version. (See V, A, 1.)
  2. YUK! YUK! Rummy
    a. Scoring: + one point for each card laid, - one point for each card left in players' hands after a player goes out.
    b. Player with the most points is the winner.

VI. Debriefing

A. Questions such as the following may be appropriate:
  1. What are some causes of pollution?
  2. What are some of the ways to reduce those particular causes of pollution?
  3. What are some causes and solutions other than those in the game?
  4. What kinds of pollution exist in our community?
  5. What can you do to reduce pollution?
  6. Why do we want to reduce pollution?

B. Test according to the behavioral objectives.